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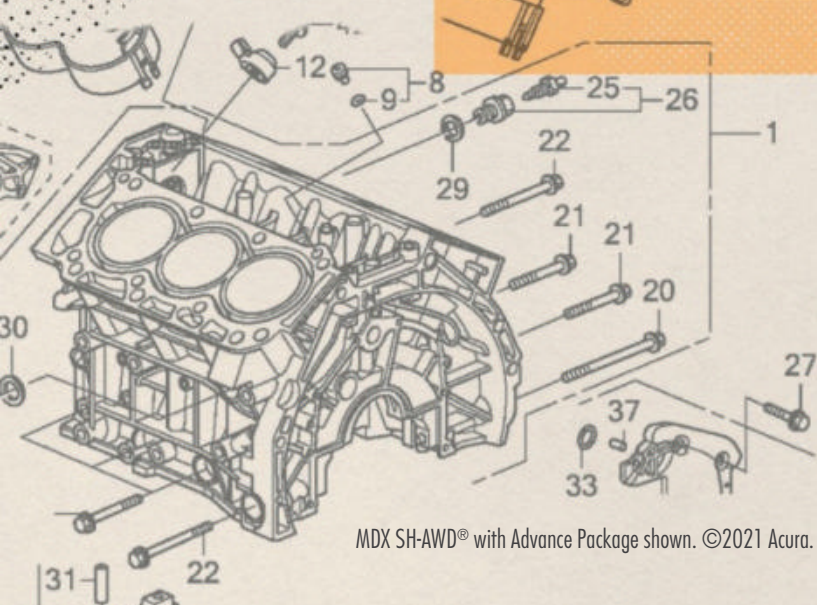
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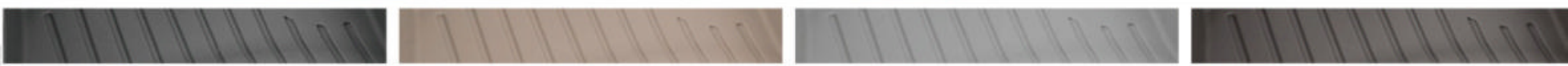
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ON THE COVER
Still Here Our seven affordable contenders show there's still room for competition in the midsize sedan class.
Photo: Brandon Lim

May 2021



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COVER STORY

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VOL. 73 NO. 5

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What a Biden Presidency Means for the Auto Industry ... and You

When Donald Trump was elected president four years ago, MotorTrend wrote a critical analysis of what the Trump administration would mean for our way of transport. Republican-leaning readers dared me to deliberate this issue in a similarly critical manner the next time a Democrat resided in the Oval Office. I shall not disappoint.

“Corvette Joe” Biden is president of the United States, and like all new CEOs of America, he has a list of goals, including how he wants Americans to get around the country. But just like George H.W. Bush being mystified by a supermarket scanner, Biden’s four-decade Beltway residency and Amtrak commute has made him ill-equipped to navigate the realities of transportation’s future. And progressive Democrats are riding shotgun, one gaudy initiative at a time.

Biden is expected to reverse Trump’s emissions and fuel economy regulation relaxations, reinstating Obama-era standards, and has expressed support for the 16 states that follow the California Air Resources Board statutes. Automakers don’t want to be on the wrong side of climate change and will play ball, despite some added costs. They’ll appreciate being part of Biden’s pledged 1 million new jobs from infrastructure and clean tech. This is all noble and good. Cleaning auto emissions is a fast way to improve our air quality.

However, Biden has taken the next step beyond rejoining the Paris Agreement, pledging to make the U.S. government vehicle fleet all-electric by 2030. This is more of a paper proclamation, as there are plenty of loopholes to keep internal combustion vehicles where necessary.

As for EVs and the public, Democrats fended off Trump’s attempts to squash the \$7,500 tax credit, and Biden wants to extend it. This is government picking winners (which it does all the time), but now the credit will benefit purchasers of lower-priced EVs as more affordable nameplates reach market.

Biden also wants to push for at least 500,000 more EV charging stations to make electrics more accessible to all Americans as EV purchase prices come down.

But then fantasy diverges from reality. California Governor Gavin Newsom has pledged *all* new passenger vehicles sold in the state will be zero-emission by 2035. A similar plan for all Americans is working its way through Congress.

This is preposterous. First, lawmakers cannot force citizens to buy vehicles. After all, “freedom” includes freedom of choice, though Biden’s proposed “cash for clunkers” program to exchange gas burners for EVs could sweeten the pot.

Unless shoppers can have price, performance, and fill-up-time parity for an electric equivalent to a gas Honda Civic or Chevy Tahoe, there won’t be demand. Dealership lots will be filled with unsold inventory. Factory lines will



slow and stop. The last thing Democrats want to do is honk off the UAW, so expect these mandates to get defanged if technological improvement doesn’t meet needed targets.

More worrisome, EVs today represent a mere sliver of the overall vehicle market. Subtract the trendy, monied enclaves of Palo Alto and Santa Monica in California, Seattle, Boston, and New York City, and EV sales are virtually nonexistent.

To require such a stratospheric ramp-up of EV market share means Americans will have to start surrendering the keys to their 275 million gas-powered Accords, Explorers, and, yes, Silverados, to embrace the electric future. Subsidies are a start, but government cannot mandate consumer choice. Given certain OEMs’ budgetary commitments to EVs, they are certainly ramping up.

As for larger transport issues, Biden’s naming of Pete Buttigieg as Secretary of Transportation seems odd. What does a mayor of a college town of 100,000 people really know about federal transportation infrastructure? We’ll find out. Biden also needs to fill crucial department-head roles with subject-matter experts, such as the NHTSA administrator—a vacant position since August 2019, and even then, it was an “acting” head of the agency.

Speaking of Buttigieg, Mayor Pete has already started pushing to upgrade Amtrak to the equivalent of European high-speed rail. While HSR has merits in certain applications, it also costs about \$200 million *per mile* to build, at least in California. With that math, to merely replicate Amtrak’s existing 22,000-mile network would cost \$4.4 trillion.

Add all of this up, and Republicans will feast on these “coastal elite” tax increases come election time—and you can say goodbye to the Democrat-led Senate. It’s *realpolitik* in action, and that’s what really drives this country. ■

Joe Biden has pledged to make the federal vehicle fleet all-electric by 2030.

ILLUSTRATION: RYAN LUGO

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Trend 5.21

RAPTOR

FIRST LOOK


PHOTOGRAPHS STEVEN PHAM

2021 Ford F-150 Raptor

Raptor evolution has begun, and it's hunting TRX

We still have to wait a year to see Ford's full-throated response to the Ram TRX when the special F-150 Raptor R arrives with a powerful V-8. But we're just as excited to see the latest twin-turbo V-6 Raptor that Ford unveiled recently. You'll be able to buy it this summer with optional 37-inch tires—a production truck first.

Ford needed two new frames for the Raptor lineup, both modified to accommodate the new five-link coil-sprung rear suspension, and one further revised to accommodate a 37-inch spare tire mounted under the bed. In fact, the 37s

are part of a whole system, including wheels and tires, different shock hardware, and different overall tuning. The standard Raptor will come with 35-inch tires.

In the past, 35s were a big step. "To get a factory-delivered vehicle with 37s all integrated in the chassis electronics, versus what people have been doing when their 35s wore out, that's why we spent time to do this," Ford Performance chief engineer Carl Widmann said.




It also one-ups the TRX, which comes on 35s.

Program manager Tony Greco said the team knew the rear suspension needed to grow, but there was nothing in-house to grab. So they designed a purpose-built five-link, coil-sprung live axle to provide more control and put power to the ground with greater confidence over rough terrain at high speeds.

"The suspension allows us to not only get bigger wheels and tires on the truck but get torque to the ground, because it's not pitching the axle anymore," Widmann said.

The five-link rear suspension features extra-long trailing arms to better maintain axle position on rough terrain, a Panhard rod for lateral location, and 24-inch coil springs—the longest in the class (a record formerly held by the TRX). The new suspension, combined with more sophisticated engine management software, means the truck can put more torque to the rear wheels for quicker starts off the line, faster acceleration, and better throttle response, on top of





A Ford Performance steering wheel has controls for exhaust system modes and drive modes—and, of course, it has paddle shifters.

better traction, stability, and handling, Greco says.

Part of what makes this the most differentiated Raptor from its donor F-150 is 15.0 inches of suspension travel in the back and 14.0 inches in the front, Greco says. Wheel travel has increased 25 percent from the original 2010 model and an inch more than the outgoing model. (Note that with the 37-inch tires, travel is restricted to 13.0 inches in front, 14.1 inches rear.)

From there, the Raptor team focused on shocks that are bigger than ever, with thicker tubes and double the damping control. The trucks with 35-inch tires get one type of shock, and those riding on 37-inchers get unique shocks to cope with their greater unsprung weight and slightly reduced travel.

Next-generation Fox Live Valve internal bypass shocks with electronic control technology soak up giant whoops and landings by adjusting the damping depending on the position of the wheel in its travel—even when the truck is airborne. There is an extra inch of rebound travel, as well.

The race-proven shocks are designed to better resist heat buildup and react faster to terrain changes at desert speeds. Sensors take readings each corner 500 times per second and alter the damping rates 12 times per second.

We are told Ford revised the 3.5-liter twin-turbo V-6 to improve performance and reduce emissions. It's paired to a unique induction system from Ford Performance. The new exhaust design allows for Quiet mode as well as Normal,

Sport, and Baja, the latter two rumbling like a V-8.

The new induction system also broadens the torque curve; low-end torque is expected to come up, but peak numbers should remain similar, Widmann says. Horsepower and torque figures had not been released at press time. The prototypes are getting about 500 miles per 36.0-gallon tank, or slightly less than 14 mpg in extreme test conditions.

The engine, mated to a 10-speed automatic transmission, does allow for increased towing and payload capacity. Both rise by 200 pounds, to 8,200 and 1,400 pounds, respectively, again topping the TRX.

Ford's Terrain Management System has seven modes, including Sport, Rock Crawl, and Baja, as well as a one-pedal drive mode that coordinates acceleration and braking from accelerator-pedal movement alone for more control off-road. Trail Control, which is standard, is a form of cruise control at low speeds.

Look up in the overhead console for the auxiliary switches, one of which is factory-assigned to the inboard Rigid-brand front foglamps. In front of the driver



The base seat is fabric and leather with large side bolsters. Higher trims have suede accents, and you can opt for Recaro bucket seats.

SPECS 2021 Ford F-150 Raptor
BASE PRICE \$63,000 (est)
LAYOUT Front-engine, 4WD, 5-pass, 4-door truck
ENGINE 3.5L/450-hp (est)/510-lb-ft (est) twin-turbo DOHC 24-valve V-6
TRANSMISSION 10-speed auto
CURB WEIGHT 5,750 lb (est)
WHEELBASE 145.4 in
L x W x H 232.6 x 86.6 x 79.8-80.7 in
0-60 MPH 5.5 sec (MT est)
EPA FUEL ECON Not yet rated
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are Raptor-specific graphics on the digital instrument cluster, plus off-road data and turn-by-turn navigation in a 12.0-inch screen, with a second 12.0-inch center screen from the standard F-150.

The Raptor has Ford's Sync 4 infotainment system, which offers traffic information, wireless Apple CarPlay and Android Auto, and a 360-degree camera. The truck can get over-the-air updates, including trail maps and trail turn assist, a function that will help the Raptor turn tighter by braking the inside rear wheel to make the Raptor pivot.

The Raptor gets the

2.0-kilowatt Pro-Power Onboard generator from the new F-150—a game changer for providing power in the middle of nowhere. The power tailgate, tow package, and Torsen limited-slip rear differential from the F-150 are also offered.

For the 2021 model, Ford simplified the options. Overall, the Raptor has three trims and three available packages.

Safety comes in the form of Ford's Co-Pilot360 2.0, which has added improved parking assistance and is equipped to add hands-free highway driving later in the model year via an over-the-air update.

Alisa Priddle



FOR A VIDEO WALKAROUND OF THE RAPTOR, point your smartphone camera here.



Intake

2022 Nissan Frontier

FIRST LOOK



George W. Bush was just finishing up his first term as president of the United States when Nissan last redesigned its Frontier midsize pickup. Nearly 20 years later, the entry-level truck finally sports brand-new bodywork, albeit draped over underpinnings updated last year.

That's no bad thing, though, as Nissan has continued to massage the Frontier's frame and powertrain lineup over the years. Notably, the Frontier welcomed a new 310-hp 3.8-liter V-6 and nine-speed automatic as its sole powertrain for the 2020 model year. That carries over for this redesigned 2022, and the previous four-cylinder engine

and manual transmission options remain no-shows. As such, we doubt the new Frontier's base price will come in at less than the 2021 truck's \$28,185 starting sum.

Gone is the old truck's outdated interior. In its place is a markedly improved cabin with standard features such as a 7.0-inch gauge cluster display and an 8.0-inch touchscreen infotainment system that's both Android Auto and Apple CarPlay compatible.

An even larger 9.0-inch infotainment setup is optional, as are safety and convenience items such as a wireless phone charger, adaptive cruise control, blind-spot monitoring, automatic high-beam

headlights, and automatic forward and rear emergency braking systems. Nissan also fits the 2022 Frontier with hydraulic cab mounts, extra sound insulation, a reworked rear carpet structure, and acoustic laminated glass on the front doors as a means of further suppressing road vibrations and exterior noises entering the truck's cabin.

Like its predecessor, the 2022 Frontier is available in extended-cab King Cab and four-door Crew Cab body styles. The smaller King Cab packs a 6-foot bed and comes in entry-level S and midgrade SV trims. The larger Crew Cab, meanwhile, comes strictly with a 5-foot bed in base S guise.

However, the 6-foot bed is available on the SV trim. Opting for the Crew Cab Long Bed stretches the truck's wheelbase to 139.8 inches—13.8 inches longer than all other models.

The real head turners, though, are the Pro-X and Pro-4X models. The former is a new addition, a pre-runner-style truck with the butch styling of the off-road-oriented four-wheel-drive Pro-4X model to a front-drive setup. Nissan limits both trims to the Crew Cab body and the 5-foot bed.

Although both Pro-X and Pro-4X trims add Bilstein shocks, a Dana-sourced rear axle, LED headlights and foglights, fender flares, and special 17-inch wheels wrapped in all-terrain tires, only the more capable Pro-4X sports a total of three steel skidplates (the Pro-X has just one), an electronically locking rear differential, and an available 360-degree camera with a dedicated off-road mode. The latter bit leaves the camera displayed on the infotainment screen at low speeds to help the driver spot nearby obstacles when the truck is in four low.

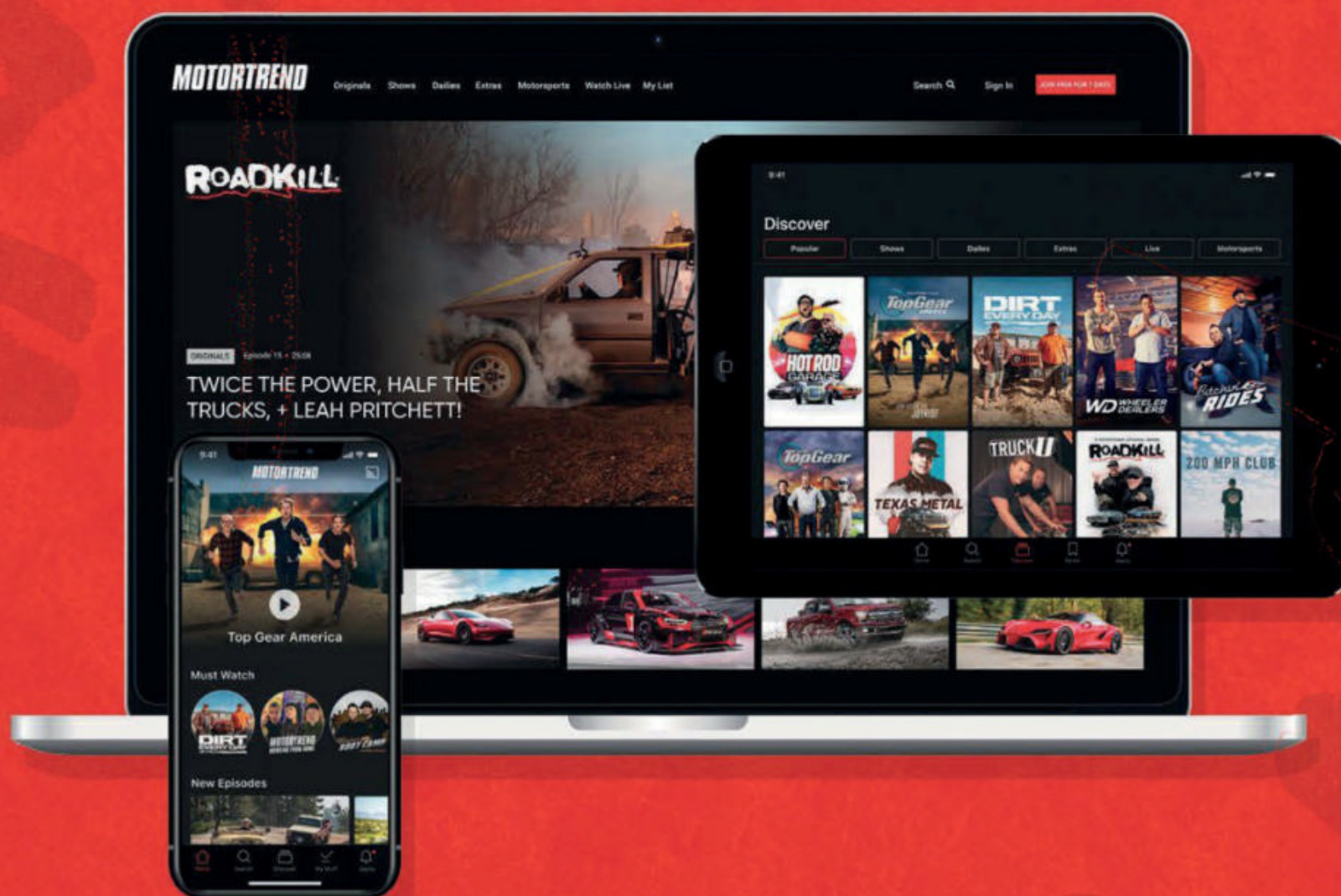
Despite carrying over much of its forebear's mechanical pieces, the 2022 Frontier seemingly fixes our biggest complaints about the outgoing truck. Look for the 2022 Frontier to go on sale this summer. **Greg Fink**



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Intake

2022 Nissan Pathfinder

After a single-year hiatus, the Nissan Pathfinder returns for the 2022 model year. Having shed its predecessor's jelly-bean shape, the new Pathfinder instead wears rugged bodywork that more closely resembles the look of the larger body-on-frame 2021 Nissan Armada. Don't let the styling fool you, though; the Pathfinder retains front-drive-based unibody underpinnings.

Although the squarer shape, swollen fenders, canted C-pillar, and imposing mug make it look larger than its 2020 counterpart (at least in photos), the three-row Nissan SUV actually sees its overall length shrink by 1.5 inches, to 197.0. As before, wheelbase measures 114.2 inches.

Predictably, the available cargo capacity changes a little.



FIRST LOOK



The new Pathfinder interior trades soft-edged design for tougher and blockier decor.

With 16.6, 45.0, and 80.5 cubic feet of space behind the third, second, and first rows of seats, respectively, there are gains of 0.4 and 1.0 cubic feet with all seats in place and with its rear rows folded. With only the third-row seats tucked away, the latest Pathfinder is down 2.4 cubic feet of cargo space. It remains on the low end of the segment in cargo capacity.

Despite the exterior dimensions changing little relative to its predecessor, the new SUV actually packs more seats within its cabin courtesy of a new third-row bench that now seats three and complements the standard

three-across second-row bench and two front buckets. Second-row captain's chairs are available.

An 8.0-inch touchscreen infotainment system that's Apple CarPlay and Android Auto compatible, a 7.0-inch gauge cluster display, and tri-zone automatic climate control are all standard. Higher trims offer a 9.0-inch infotainment system, 12.3-inch digital gauge cluster, and 10.8-inch head-up display.

Additionally, Nissan offers adaptive cruise control with lane-centering steering assist (ProPilot Assist in Nissan-speak) on SV, SL, and Platinum


models, but not on the base S. All 2022 Pathfinders come standard with LED headlights, automatic forward and rear emergency braking, blind-spot monitoring with rear cross-traffic alert, lane departure warning, and automatic high-beam headlights.

Nissan's 3.5-liter V-6 returns for 2022, still producing 284 hp and 259 lb-ft of torque. Gone is the previous model's continuously variable automatic transmission, replaced by a new nine-speed automatic gearbox. Front-wheel drive remains the default setup. However, an all-wheel-drive system with seven drive modes (Standard, Sport, Eco, Snow, Sand, Mud/Rut, and Tow) is available.

Like the previous Pathfinder, the 2022 model offers a maximum towing capacity of up to 6,000 pounds when properly equipped, among the highest in the segment. The setup is standard on the top-end Pathfinder Platinum and optional on SV and SL trims. Forgoing the extra towing kit or opting for the entry-level Pathfinder S drops the model's maximum towing capacity to 3,500 pounds.

The 2022 Pathfinder's biggest updates fix the previous model's biggest flaws. That said, its small-for-the-class cargo capacity may prevent the latest Pathfinder from toppling segment stalwarts. Look for it to go on sale this summer, likely with a starting sum of less than \$35,000. **Greg Fink**





The Honda Civic Type R Limited Edition drops 50 pounds in curb weight, but 22 of that comes in unsprung weight, which has myriad benefits.

2021 Honda Civic Type R Limited Edition

FIRST DRIVE



SPECS 2021 Honda Civic Type R (Limited Edition)

BASE PRICE \$44,950

LAYOUT Front-engine, FWD, 4-pass, 4-door hatchback

ENGINE 2.0L/306-hp/295-lb-ft turbo DOHC 16-valve I-4

TRANSMISSION 6-speed manual

CURB WEIGHT 3,100 lb

WHEELBASE 106.3 in

L x W x H 179.4 x 73.9 x 56.5 in

0-60 MPH 5.0 sec (MT est)

EPA FUEL ECON 22/28/25 mpg

ENERGY CONSUMPTION, CITY/HWY 153/120 kWh/100 miles

CO2 EMISSIONS, COMB 0.80 lb/mile

ON SALE Now

Let's not beat around the bushings. The Honda Civic Type R LE loses all of 50 pounds compared to a standard Civic Type R Touring, according to Honda. That's not a lot when a Type R Touring weighs more than 3,100 pounds. Where the weight came from, though, matters.

Twenty-eight pounds of weight saving came from removing sound-deadening material in the roof, rear hatch, dashboard, and front fenders, all high points on the car. Also included in that total are the deletion of the rear wiper and cargo cover, also fairly high up.

The real score, though, was in the reduction of unsprung weight. Unsprung weight is everything not resting on the suspension's springs. Honda already saved 2.5 pounds per front wheel last year by switching to two-piece front brake rotors. The Type R LE goes a step further, installing forged BBS wheels that are 4.5 pounds lighter apiece, wrapped in Michelin Pilot Sport Cup 2 tires, each a pound lighter—for a total of 22 pounds saved.

The difference, as demonstrated on the Thermal

Club's South Palm circuit, is in no way academic; it's absolutely visceral. To prove it, Honda started us out in a Type R Touring, with its standard wheels and Continental SportContact 6 tires.

The Civic Type R LE, no joke, feels like it has 30 more horsepower and twice the tire. Coming out of South Palm's never-ending hairpins, the Type R LE felt more powerful out of the corner and quicker to reach redline in every gear. No, there were no engine changes. That's how much of a difference it makes when you take pounds off the wheels.

With less rotational inertia to fight, it's easier get the wheels spinning or slow them back down. Compared to the Type R Touring, the Type R LE

could go a full braking marker deeper into every braking zone and still make the corner just the same. Helping the car brake better are those sticky Cup 2 tires, the best street-legal tire you can get from any automaker.

Thanks in part to updated software for the shock absorbers, which takes into account the 22 pounds of unsprung weight savings, the Type R LE feels more balanced through the corners. Hitting the curbs doesn't knock the rear end into a little oversteer as in the standard car. The LE stays stuck on its path. No doubt the seemingly modest weight savings improved my lap times noticeably. The car feels that much better to drive.

Yes, the \$6,500 Honda charges to upgrade from Civic Type R Touring to one of the 600 imported Type R LEs is more than a set of wheels and tires would cost—but remember you're also buying the additional weight savings, the shock absorber software, and the exclusive Phoenix Yellow paint with black roof, mirrors, and hood scoop all LEs get. At least the built-in datalogger and lap timer making its debut on the LE will be available on all Type R's.

Scott Evans



Intake

2021 Honda Ridgeline

FIRST LOOK



As the result of a more extensive redesign than the typical midcycle refresh, the 2021 Honda Ridgeline's sheetmetal forward of its windshield is all-new, and it shows. A more prominent, larger grille gives the Ridgeline a bolder look and a more upright front end.

The trim that crosses the upper part of the grille is chrome on the RTL and RTL-E trims, and we'll leave judgments of its attractiveness to you. On entry-level Sport trims and the snazzier Black Edition models, this unibrow has a classier, lower-key gloss black finish.

The lower front fascia is restyled, too, with big side vents that serve an aerodynamic



purpose, and it recalls the controversial 2019 Silverado's Megatron-helmet-style cheekbone garnishes. The Ridgeline's is perhaps a more successful, if not more subtle, implementation of a similar idea. Out back, a revised bumper houses aggressive new

twin exhaust tips, looking a bit like the sporty bumper design on some Ram 1500s.

The Ridgeline RTL-E pictured here is beefed up further by way of a \$2,800 HPD appearance package. Available on any trim, it improves on the Honda's already handsome redesign. The grille treatment, with its oversized, chunky texture, is ruggedly handsome. The bronze-colored wheels are fantastic, giving a visual pop that evokes the company's off-road powersports offerings. And like any good truck appearance package, there are big "HPD" graphics on the bed sides and a badge on the tailgate.

The standard grille is simpler with five horizontal slats; the wheels are five-spoke

18-inchers. Gone are the chunky plastic fender flares and HPD bed graphics. The new all-terrain tires stick around, though.

Revisions to the Ridgeline's insides are minor but welcome. An updated infotainment system finally incorporates a real, physical volume knob—hallelujah!—and there are new interior materials and accents. All the Ridgeline's neat, convenient storage cubbies are still there, and Honda's low-profile push-button shifter (added last year) further frees up space on the console. (The front seats have fold-down individual armrests.)

There are no powertrain or running gear changes worth noting, beyond the truck's surprising loss of its standard front-drive configuration. This means all Ridgelines now have Honda's torque-vectoring i-VTM4 all-wheel-drive system as standard; previously, only the upper RTL-E and Black Editions came standard with AWD. The change pushes the entry-level Ridgeline Sport's price northward, but compared to last year's Sport equipped with (then-optional) AWD, the price increase is a mere \$350.

All Ridgelines are powered by the company's 280-hp 3.5-liter V-6 hooked to a nine-speed automatic transmission. As before, the Ridgeline rides on a fully independent suspension; in its present incarnation, it rides comfortably and handles smartly. Welcome carryover features include a dual-action swing-out or swing-down tailgate, a waterproof "trunk" built into the pickup bed floor, and standard Honda Sensing active safety features: adaptive cruise control, lane departure warning, and automated emergency braking.

Alex Kierstein



DAX SHEPARD

ROB CORDDRY

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Intake

Best Tech of CES 2021

WORDS FRANK MARKUS



Wireless Battery Management Systems

A BMS manages the charging and discharging of a battery pack by monitoring its current, voltage, temperature, and state of charge so it can safely be used for thousands of charge/discharge cycles. This monitoring has traditionally been done via copper wires connecting each cell, but switching to 2.4-GHz wireless communication can eliminate 75 to 200 pounds of wiring. This also eliminates time delays and makes it possible to time-synchronize measurements across the entire pack. GM's Ultium battery packs arriving in 2022 will use a system by Analog Devices Inc., and TI Automotive introduced a system it will roll out shortly thereafter.



Mercedes-Benz Hyperscreen

This 56-inch-wide curved whopper of an instrument and infotainment screen will make its debut in the Mercedes EQS. Its aluminum silicate Gorilla Glass surface is highly durable, and the OLED screens in the center and passenger side and the LED/LCD section in front of the driver are bonded directly to it, along with 12 actuators that provide haptic feedback for the touchscreen. A new "Zero Layer" places the most frequently used controls on the main screen, and there is natural-speech voice control. Eight CPU cores, 24 GB of RAM, and 46 GB/second RAM memory bandwidth help Hyperscreen serve as the car's brain and central nervous system.



REAR VIEW

From the MT Archive ...



50

MAY 1971

PRICE: \$0.50

Back in 1971, we covered automotive safety, specifically focusing on the rise of "The Safety Cars." These were concept cars produced in collaboration with the Department

of Transportation, with the end goal of reducing automotive fatalities within the decade. Modern cars are as focused on collision avoidance as they are mitigation, but these early safety cars had unique features like hydraulic bumpers and extra interior padding to make them safer.



30

MAY 1991

PRICE: \$2.95

A predecessor of sorts to our modern-day Best Driver's Car program, our cover story for May 1991 was a Best Handling Cars test pitting 10 cars against one another: the Acura NSX, Nissan 300ZX Turbo, Mitsubishi 3000GT VR-4, Porsche 944 S2, Toyota MR2 Turbo, Chevrolet Corvette ZR-1, Mazda Miata, Nissan NX 2000, Lotus Elan, and Pontiac Firebird Formula. The vehicles finished in that order.



10

MAY 2011

PRICE: \$4.99

This issue a decade ago was all about muscle cars. The cover story was our first test of the now-legendary Ford Mustang Boss 302, and elsewhere in the issue we covered the then-new Chevrolet Camaro ZL1.

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Best Tech of CES 2021



Panasonic Augmented Reality Head-Up Display (HUD)

Why should head-up displays only show redundant info? Panasonic’s Augmented Reality HUD uses overhead-projector tech to superimpose warning notices right on top of pedestrians, road hazards, bicyclists, bridge clearances, etc. It can also paint your navigation path directly on the road with arrows hovering above it, points of interest can be highlighted, and crosswalks can be colored for emphasis. The image boasts 4K resolution and doesn’t require a wedge insert in the windshield—but adding a film on the windshield could allow an infrared camera to monitor the driver’s eye position, which it must know to accurately place its images.



Gentex Mirror Display with Touch, Cameras

Mirrors that project a wider rear camera view are old hat, but Zeeland, Michigan–based supplier Gentex proposes incorporating touchscreen functionality. A pinch or swipe could change the view or select between standard rear view and, say, that of a trailer cam. Gentex also suggests incorporating side-mirror camera views in part of the display when the turn signal is applied. A hidden camera behind the mirror glass could snap selfies, broadcast Zoom meeting video, or monitor the cabin for child-left-behind warnings and the like. Incorporating a forward-facing “dash cam” that records to an SD card could potentially help lower insurance costs.



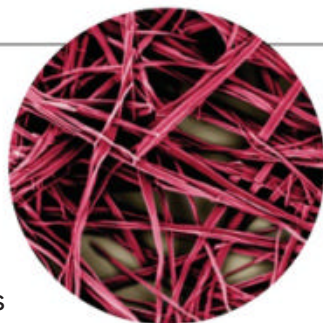
GHSP Dual Stack Rotary Multifunction Controller

Imagine a two-story iDrive knob that also shifts the transmission. When powered off, only the lower multifunction wheel is accessible, but starting the vehicle elevates the concentric gear selector. It only turns 30 degrees or so in either direction before returning to center, and it features a dramatically different texture from the lower ring. That one is ribbed and rotates 360 degrees; pressing it down selects a function. Supplier GHSP reckons safety is enhanced because the dual knobs are easy to access and easily distinguishable. Drivers should never have to look at the knobs or worry about confusing one for the other.



Smoke/Vape/Chemical Weapons Detector

Gentex started out in the smoke detector biz and recently acquired Utah-based startup Vaporsens, which has developed a new nanofiber technology that employs a mesh net of nanofibers about 1/1,000th the size of a human hair. The porous fibers absorb targeted molecules, identifying them via subtle changes in electrical resistance. With such a filter in the HVAC system or in overhead console sensors, a shared vehicle or robotaxi could identify scofflaws who smoke or vape in a vehicle or potentially sense more dangerous substances brought into or left behind in a vehicle, triggering driver monitoring and cabin sensing cameras to capture images of the perps.





MIKE CONNOR

MT CONFIDENTIAL

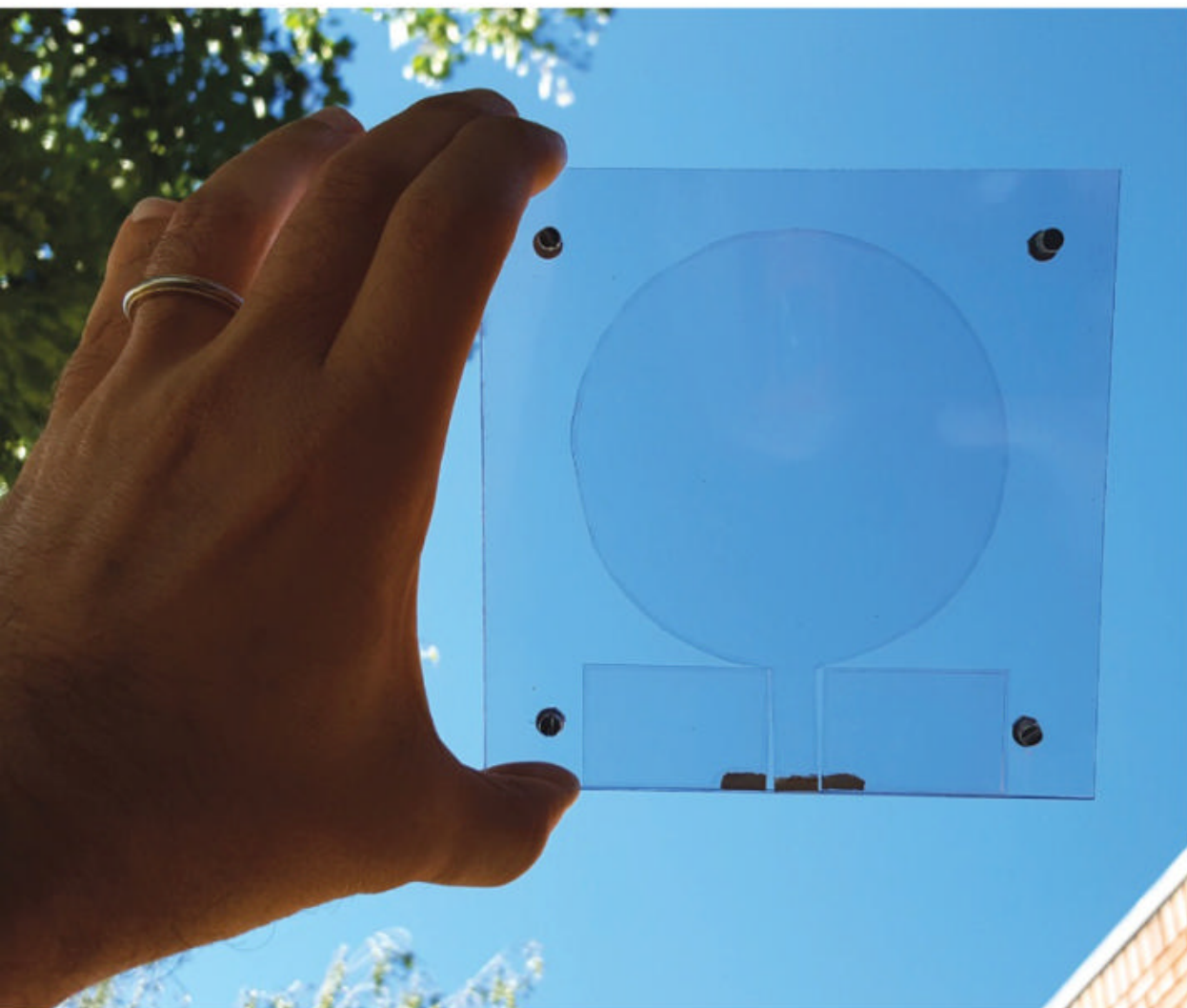
E-VETTE SUV IS REAL That electric-powered Corvette crossover you all thought you saw lurking in the shadows during design chief Mike Simcoe's segment of GM's 2021 CES keynote presentation? It's for real. To be built on GM's new Ultium BEV architecture and expected to make its debut in 2024, this electric 'Vette SUV will be a four-door, four-seat, performance-tuned crossover with key design cues lifted from the mid-engine C8. Although the idea of a Corvette being anything other than a two-door sports car might have purists clutching their pearls, in an era when sports car stalwarts Jaguar and Porsche are building BEV crossovers—not to mention Ford has even badged its BEV crossover a Mustang—it makes good business sense. And whispers out of Detroit hint the crossover may not be the only four-door electric Corvette we'll see. A lower, faster Ultium-based Porsche Taycan rival is reportedly also under consideration. **BUT FIRST ...** Arriving before the first-ever electric Corvette crossover is the first ever Corvette hybrid: the C8 E-Ray. The E-Ray will be to the C8 lineup what the Grand Sport was to the C7: a Corvette that's sharper and faster than the regular model yet still affordable and accessible as a daily driver. But what makes the C8 E-Ray radically different from the old C7 Grand Sport is that its increased performance won't be the result of tweaks to the 6.2-liter V-8 engine, but of a front-mounted electric motor that is said to develop 215 hp. With all-wheel drive and a total system output of close to 590 hp, the E-Ray will be quicker to 60 mph than the forthcoming C8 Z06, Detroit sources say. It's not all bad news for the Z06, though: With its high-revving naturally aspirated quad-cam V-8 and track-tuned chassis, the rear-drive Z06 will still be quicker overall. **OFF-ROAD 911?** Photos of a high-riding Porsche 911 spotted on roads around the company's Weissach R&D center have prompted speculation the company is working on a 992-series 911 for fans of gravel roads. Likely to be badged the 911 Safari, it wouldn't be the first 911 designed to get down and dirty: Porsche built a high-riding version of the 911 SC for the 1978 East Africa Safari Rally, and the all-wheel-drive 953 was built for the 1984 Paris-Dakar Rally. Porsche teased a 911 Safari concept in 2012, but the unique rear bumper spotted on the 2021 prototype suggests the company may be serious about production.



Using Toll Tags to Buy Gas/Parking

paybycar

New cars are gradually incorporating Integrated Toll Module devices into their windshield mirror assemblies, and now ITM supplier Gentex is working with PayByCar to enable contactless in-vehicle payment of other products and services, such as gas and parking. Pulling into a gas station, your car will be identified and your phone will get a message asking which pump you're pulling up to and what grade of gas you want—then authorize that pump and automatically charge your preferred method of payment. The program is just rolling out at gas stations on the East Coast.



META NanoWeb See-Through 5G Antenna

With the increasing popularity of hood-to-trunk glass windshield/roof/backlite designs, the problem of where to put an antenna arises. Here's a handy solution: a see-through antenna. The magic that allows this nearly transparent antenna to work almost as well as a metal one is its highly transparent metal mesh, which marks a huge improvement over previous metallic films like indium tin oxide (sometimes used in windshield defrosters). Optical transmission is up to 98 percent with no color tinting and minimal haze (less than 1 percent). It's designed to receive frequencies from 400 MHz to 92 GHz (4G, 5G, XM radio, etc.).

Frank Markus

Technologue

Lidar-Di, Lidar-Da ... Your iPhone May Hasten Autonomous Driving

Virtual CES 2021 sucked as much as Virtual Everything Else did, but compelling news broke regarding lidar and autonomous driving. I'm not dialed in enough to sort lidar hype from heroics, so I connected with Tom Jellicoe, an optics expert at the Technology Partnership, a U.K.-based consultancy. Jellicoe was kind enough to Cambridge-mastersplain these latest "third-generation" lidar sensors and their VCSEL array semiconductor lasers to me.

For the newbies: Today's lidar works by emitting pulsed laser light into the surrounding area, which then bounces back to the sensor, allowing the unit to detect its surroundings multiple times per second. This is key to any autonomous vehicle driving and adjusting to everything around it. (Tesla is the lone notable holdout to incorporating lidar into automated driving.)

First-gen lasers were super expensive, so lidar units generally spun them around or wagged them back and forth. Second-gen units aimed them at (sometimes tiny) moving mirrors, or they generated flash images for shorter-range sensing.

Now, the iPhone 12 Pro incorporates a cheap new type of lidar, known as a vertical-cavity surface-emitting laser (VCSEL), to focus the camera. Here's why they're iPhone cheap:

Most semiconductor-based lasers are formed by cleaving light-emitting diode semiconductor chips, with the laser beam emitted from the exposed edge. They're tricky to split, so there's a lot of scrap, and assembling them onto a circuit board is time consuming. With VCSELs, the laser light is emitted perpendicular to the chip surface from a cavity etched into said surface. This makes it far easier and cheaper to assemble a vast VCSEL array, making true solid-state (no moving parts) lidar affordable. These lasers are tiny enough to emit brighter, farther-reaching light without harming anyone's eyes downrange.

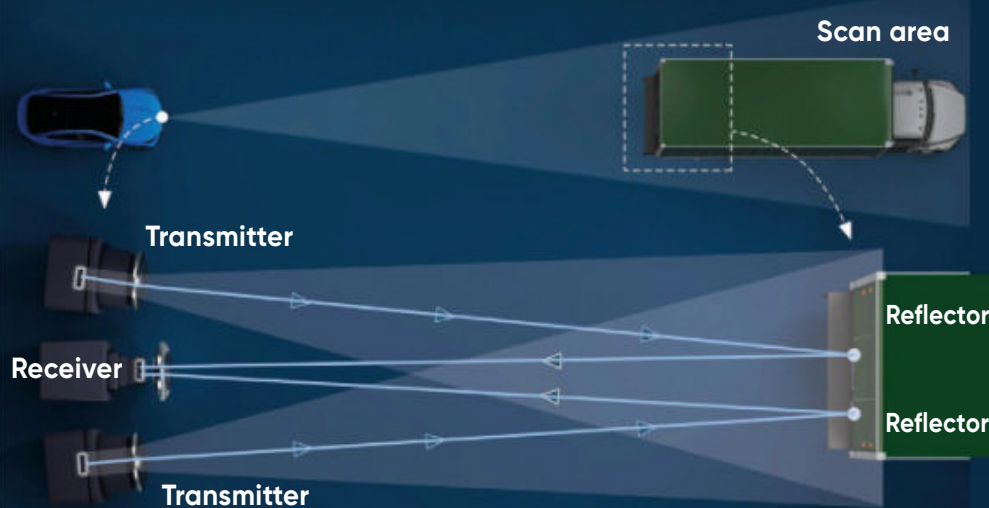
Jellicoe identified three important players: **Opsys Technologies** of Israel employs thousands of VCSELs, each addressing a particular spot on a single-photon avalanche detector (SPAD) receiver chip, similar to that of a digital camera. Opsys flashes individual VCSELs sequentially—some of which can operate at different light wave frequencies to eliminate crosstalk. It scans the horizon 1,000 times per second, measuring the time the light takes to bounce back to the receiver.

Downsampling the results to 30 frames/second for autonomous systems enhances resolution enough to identify the make of a vehicle ahead. Maximum range is 200 meters at a relatively tight 24-degree horizontal field of view, but multiple units can be ganged to broaden the field of view, with software stitching the images together. Lens optics can broaden the target area at shorter range. Automakers envision using six to eight of these roughly \$200 units to fully perceive a vehicle's surroundings. Opsys anticipates volume production in 2023–2024.

San Francisco-based **Sense Photonics** flashes an entire 15,000-VCSEL array simultaneously, illuminating 140,000 pixels on its SPAD collector. Its twist: mounting VCSELs to a curved surface

CONCENTRATING THE LIGHT

Opsys Tech scanning microflash lidar focuses the highest allowable light intensity (under the U.S. FDA limit) into a single pixel coupled with low-cost SPAD detectors to maximize operational range and resolution.



Each transmitter houses a grid of thousands of semiconductor-based VCSEL lasers that operate over a wide temperature range and scan by turning on and off rapidly across the array.

The receiver is a single-chip, low-cost, semiconductor-based SPAD array that delivers best-in-class sensitivity and resolution.

It's far easier and cheaper to assemble a vast VCSEL array, making solid-state lidar affordable.

to broaden the field of view, but SP's maximum 200-meter range over a 30-degree horizontal field is achieved using a flat chip. Cost is currently estimated "in the hundreds" of dollars, with production expected by late 2024.

Hailing from Hamburg, Germany, the **IbeoNEXT** employs a 128-by-80 array of VCSELs (10,240 of them) and splits the difference between the above two: It flashes horizontal rows of VCSELs to generate a vertical line scan. Optical lens packages tailor the field of view and range, with the longest range (up to a claimed 250 meters) covering a narrow 12-degree horizontal field of view. The broadest field is 60 degrees at considerably shorter range, with a 120-degree lens in development.

What's next for lidar? **Aurora** and **Aeva** are developing Frequency Modulated Continuous Wave lidar, sometimes called 4D lidar. Instead of measuring the time it takes for flashes of light to return, these lasers stay on, varying their light frequency. The Doppler shift in the reflected light wave determines the distance and velocity of every reflected pixel at distances of 300 meters or more.

These lasers and their waveguides are *not* iPhone cheap, so many require steering like the first-gen units. Expect to see these initially on commercial trucks, which can tolerate higher prices and require greater warning distances to brake or swerve.

Jellicoe's biggest CES 2021 revelation: Israeli computer-vision firm Mobileye—the folks whose work with Tesla convinced Elon Musk that radar and cameras alone could power Autopilot—is finally entering the lidar biz with an FMCW system-on-chip design. Might this convince Elon himself of lidar's virtues by the next CES? ■

Interview



Cruise designed the Origin so hardware can be swapped out as it is updated.

Mo ElShenawy

Cruise Senior VP of Engineering

Cruise, a self-driving tech startup, was founded in 2013 and bought by General Motors in 2016. GM remains a majority shareholder, but Cruise operates independently, with 1,600 employees. It is headquartered in San Francisco, where it does much of its on-road testing with modified Chevrolet Bolts, and will soon add the Cruise Origin driverless vehicle. We caught up with Mohamed “Mo” ElShenawy, Cruise’s senior vice president of engineering.

How has having GM as a partner changed the trajectory of what you’re able to do? We continue to work as an independent Silicon Valley tech company, with innovation as the key ingredient. [Autonomous vehicle] software had never been invented before, and we realized to get there we have to experiment, hire the best talent in the tech industry, and compete for it. These aspects of Cruise remain the same. At the same time, partnering with GM provides us an advantage that many others don’t have, to design an [autonomous] vehicle from the ground up with scale and cost targets that would make this a viable business. The recent partnership with Microsoft sets us up for even more success.

How many self-driving vehicles will you have on the road in five years? The key mission is changing the face of transportation, having our entire fleet of self-driving vehicles, all electric, powered by renewable energy. This race is about getting us into tens of cities with hundreds of thousands of vehicles. We’re definitely [going] after launching this on a large scale.

What are you testing now? We are developing our software in a way that is unique and portable between different generations of platforms. We are testing self-driving vehicles designed from the ground up with GM and Honda, which is an amazing advantage to be able to build the new Origin to scale. Right now, we are testing the latest-generation Bolts. Our tech is continuously updating.

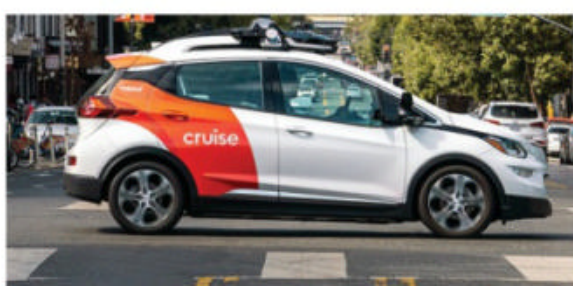


“WE’RE GOING TO PRODUCE HUNDREDS OF THOUSANDS OF THESE VERY SOON.”

Are there steering wheels and pedals in the Bolts being tested, but no drivers? We have safety drivers behind the wheel, but we started testing with no drivers after we received our permit in November 2020. We have both.

Are you still on track to start building the Origin at GM’s Hamtramck, Michigan, plant this year? We are working with GM. Factory Zero in Detroit is finalizing its tooling, and we’re going to be able to produce hundreds of thousands of these vehicles very soon.

When does the first production Origin come off the line? We are putting safety as our key target for launch rather than an arbitrary date. The community deserves a service that is safer, more reliable than humans, and we’re putting all our attention into empirical measurement of that.



Are Origin prototypes testing on the road yet? We’re testing some at [GM’s] Milford Proving Ground, but we’re not testing them on public roads.

Will the production Origin be different from the one we saw a year ago?

It’s pretty much going to be the same, although this pandemic opened our eyes to many things we hadn’t been thinking about before. Looking at research from the CDC and World Health Organization, we have Harvard epidemiologists working on reconsidering the interior design to curb the spread of this virus. That’s not only interior design but also the end-to-end user experience. This was a great opportunity for us to revisit and rethink some of these concepts.

The Origin seats six, three to a row. What are some of the things you can do? There will be more details about this later. We have specialists working on this and considering the research, but there will be different configurations, including middle sections with plexiglass, and disinfectants and things like that. But they’re still working, so I don’t want to officially state anything that hasn’t been finalized yet.

Are plans for an Origin delivery van still in the works? Yeah. Our focus is mainly on both delivery and ride-share programs. We see a lot of opportunities in these two fields.

Do both versions of Origin launch at the same time early next year? Yes, the [delivery version] is going to appear with the Origins. We’re not going to see [them] on the streets this year.

How close are you to commercialization? We’re actually very, very close. We have been exponentially progressing year after year, and we plan to start early commercialization this year. But the key focus for us is on safety. Once we surpass human performance, we’re going to be ready to launch and commercialize, of course with our permits in place. **Alisa Priddle**

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Readers Respond to Our Best Driver's Car Issue

I'm not a Lamborghini hater, but I just wasn't interested in reading about the 2020 BDC winner. The Huracán Evo just doesn't trip my trigger in photos. I read the rest of the magazine and set it to the side. My bride asked, "Are you done with this?" I snatched it back like it was the last print car mag in existence (some truth, there) and returned to my corner to extract the last few unread words.

I should've read Scott Evans' article days ago. He says nothing about the Lambo for four paragraphs yet had me hooked by the second. That was just the warm-up. Thanks for keeping me interested. Excellent work, Scott.

Jim Streicher
Marsing, Idaho

Aloha! The outrigger mail canoe takes a while to get my subscription to me, so I just received, and devoured, the March issue, specifically the BDC article.

Having spent many days driving and instructing (Audi Club) at Laguna Seca, some with Randy Pobst in attendance, this story really got my interest even beyond the cars. I have been on track in front-, mid-, and rear-engine and drive cars anywhere from 600 hp down to 115. The amazing thing is just how much fun a low-power "momentum" car, without electronic nannies, can be on that track, schooling you in finding the perfect line to carry speed everywhere, like uphill to the Corkscrew. Of which, I totally agree with Randy's observation. As iconic as that turn is, I think it's more fun to watch cars coming through there than driving one through it. Turns 6 and 10, to me, are the most rewarding ones to get right.

Lastly, I used to devour every issue of *Road & Track* with *MT* as an occasional read, but I have to say that it is now the other way around. *MT* is just a much more balanced take on things automotive these days. Congratulations!

Mike Fallis

Waikoloa, Hawaii
Aloha, Mike. We couldn't agree with you more—more often than not, "slow car fast" is better than "fast car slow."—Ed.

Thanks again for allowing us to live vicariously through the twists and turns of your BDC competition. While I can easily grasp

the sentiment that bigger and faster things are ahead for the C8 Corvette, I couldn't help but notice where it placed on your chart of historic track times. The majority of track toys that placed before it boast monstrous horsepower numbers (and similarly inflated price tags), but the one that stands out is a 2018 Corvette Grand Sport. Here we have the C8's predecessor with 35 less hp and its antiquated front-engine layout besting Chevy's newest flagship by a respectable 1.8 seconds. I'm guessing there are some in Bowling Green losing sleep over this one.

Ken Busi
via Email

Always love the BDC articles, as they put it all together rather than being a few numbers on a spec sheet. However, the least expensive car in the 2021 test cost more than \$90K, so I'm left out—way out. It would be great if you could also do a version for us mere mortals. Something like Best Driver's Car for less than \$40K.

Keep up the good work. It must have been an interesting year.

Bob Hunnicutt

Santa Rosa, California

If it makes you feel any better, we also feel left out looking at the price tags of our BDC contenders. Although "affordable" driver's cars are becoming harder to come by, rest assured we're cooking up a few things along the lines of what you suggest.—Ed.

I subscribe to your publication, as I have a lifelong affinity for automobiles. I like them; they interest me. I even like to read about the technical aspects of cars I will never be able to afford. I have zero interest in the sophomoric behavior of some of your staff. That being said, I'd like to know, do you have any comprehension of how irritating it is to see some *classless idiot* sitting on the fender of a McLaren? Reference page 32 of your March issue.

With little respect,

Mark Regenthal

Toms River, New Jersey

Ah, that would be Top Gear America host, MotorTrend contributor, and "classless idiot" Jethro Bovingdon. He says "Hi!" After watching the first couple episodes in the first season of Top Gear America on the MotorTrend app (now streaming!), we think it's safe to say that McLaren GT got off easy.—Ed.



Reader on Location

This month's Reader on Location is **Steve Hunter** and his granddaughter reading from the comfort and safety of their home. Here's what he had to say: "Hi, *MotorTrend*! I thought you would appreciate the attached pic of me fostering my granddaughter's growing interest in cars. She particularly enjoyed the Car of the Year issue, as you can see. We usually read the latest issue after jumping on the bed. It ends up being a win-win situation for both of us!"

We realize no one is traveling these days, but if you want to be our next Reader on Location while remaining safer at home, email a photo of yourself with an issue and 50-100 words to MotorTrend@MotorTrend.com.

Family First

I loved Angus MacKenzie's article on the 1967 Alfa Romeo GTV that became a family member. It reminded me of my first car, a 1996 Fiat Uno Turbo, one of the most exciting cars I've owned. As with the Alfa, due to the fear of the higher maintenance costs, I sold it after a year. The car was so good that when I tried to buy it back years later, it had been stolen from the guy I sold it to.

Now I own a 1983 Oldsmobile Cutlass Ciera with 75,000 original miles that my great-grandfather bought brand new. It's rewarding to see the car going into the fifth generation of the family, as I take my 2-year-old daughter in it for short trips.

Gabriel Schmitzer

Cherry Hill, New Jersey

Boomers Are Triggered

Must admit I threw up a little bit when I looked at the Ford Mustang Mach-E in the last issue. If I owned a Mustang, it would be in my driveway right now with a for-sale sign on it. Feeling betrayed by Ford.

Jeff Stauffer

via Email

Why is the Mustang Mach-E called an SUV? It's a four-door hatchback with passenger car ground clearance. The sloping roofline also means it doesn't have the cargo capacity of an actual SUV. It's just an electric car with optional AWD.

Bob Dybing

via Email

Internally, we have the "what's actually an SUV?" debate at least once per year. The lines are increasingly blurry, but in most respects if a manufacturer calls a vehicle an SUV, we'll test it as such and see what it's really made of.—Ed.

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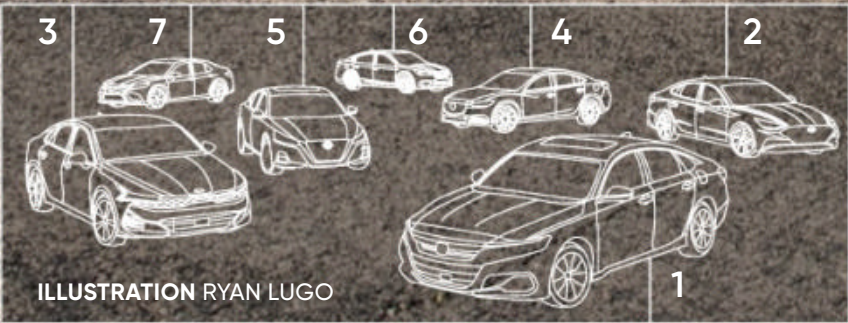
Times change. And fast. Just seven years ago—the last time we published a midsize sedan Big Test comparison—four-door family car sales were booming. Back then, four midsize sedans made the top 10 best-selling list. In 2020? Only the Toyota Camry made the cut. Expand that to the top 20, and the Honda Accord squeezes through in 17th place. Americans bought more RAV4s than Altimas, Optimas, Sonatas, Mazda 6s, and Legacy sedans combined. The once-popular midsize sedan is having an existential crisis.

Not Giving



The lineup

| | | | |
|---|----------------|-------|----------|
| 1 | Honda Accord | | \$32,285 |
| 2 | Hyundai Sonata | | \$32,174 |
| 3 | Kia K5 | | \$31,430 |
| 4 | Mazda 6 | | \$34,245 |
| 5 | Nissan Altima | | \$32,905 |
| 6 | Subaru Legacy | | \$30,820 |
| 7 | Toyota Camry | | \$29,217 |



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Honda Accord



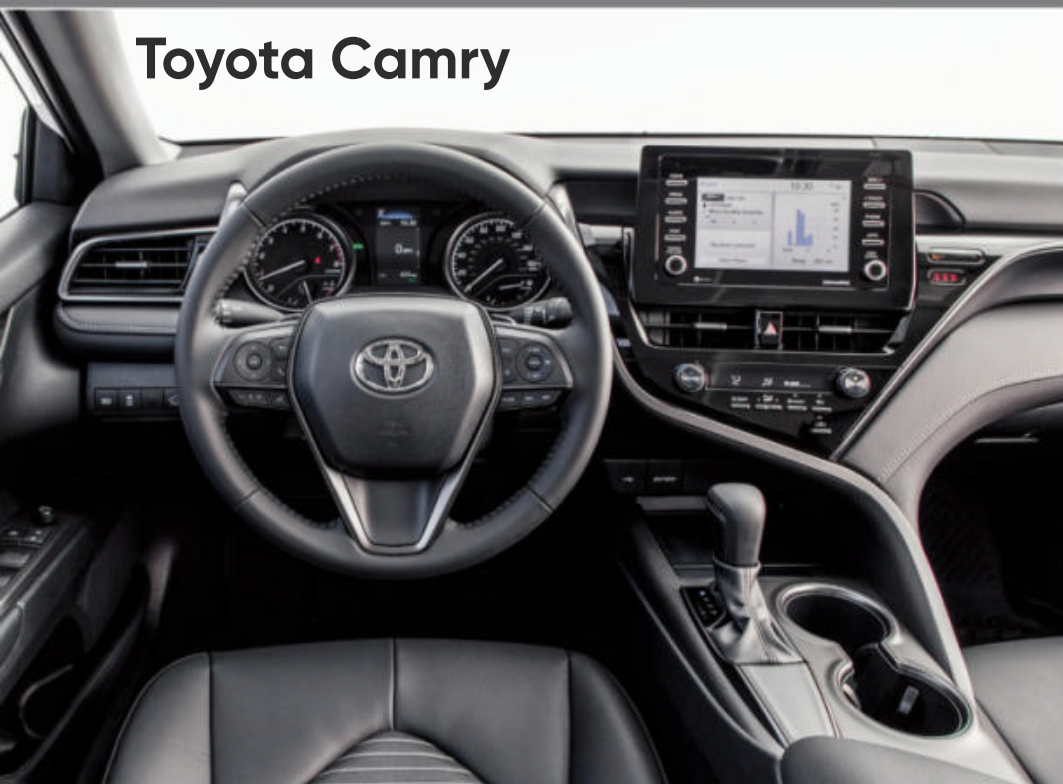
The Accord's cabin carries nice details that could be mistaken for an Acura's. From the faux wood trim that looks like the real thing to the details on the climate control knobs, designers paid close attention to the small things to deliver a premium interior.



The Accord's interior space isn't best in class, but thanks to exceptional packaging, there's tons of leg-, head-, and shoulder room both up front and in back.



Toyota Camry



The Camry's SE trim lacks many of the comfort features that other sedans have, but it also represents a great value. The 7.0-inch "floating" touchscreen, new for 2021, is a significant upgrade over the previous version. Apple CarPlay and Android Auto are standard.



Despite being the second trim from the bottom, our Camry SE came equipped with leatherette and a powered driver's seat.



The combination of reduced space, a lower ride height relative to SUVs, and cheap gas is killing sedans. As you may have noticed, there are no American nameplates in this Big Test. Ford discontinued the Fusion, Chrysler unceremoniously dumped the 200 before it could even complete its model cycle, and Chevrolet is reportedly letting the Malibu die after the 2023 model year—just like Volkswagen is doing with the Passat.

But the family sedan is far from finished. Americans bought nearly

1 million of them last year. Japanese manufacturers keep investing in the segment, and the Koreans are not giving up—the Kia K5 is the newest model in the class, while the redesigned Hyundai Sonata arrived in late 2019. After all, with Detroit walking away from sedans, its market share has to go somewhere, right?

So let us defend the sedan. With better driving dynamics, superior fuel economy, and, let's face it, much better looks than crossovers, the midsize sedan continues to be a key player in the game. But can the

industry convince car shoppers to make sedans great again?

What's Left in the Shop Window?

With our consumer hats on, we were mindful of the tight budgets people face when buying a new car, so we tried to limit each sedan to \$32,000. (The average transaction price for a new vehicle in the U.S. crested \$40,000 last year.) But with the pandemic causing strains on manufacturers' press fleets, a couple of test sedans slipped past that price ceiling.



We were disappointed with the lack of amenity features in the Altima's midlevel trim. The lack of automatic climate control seems inexcusable for a car north of \$30,000, but the Nissan Connect infotainment system is easy to use.



The contrast stitching is a nice touch in an otherwise forgettable cabin. It's hard to stand out when the newcomers bring updated tech and fancier features.



WITH BETTER DRIVING DYNAMICS, SUPERIOR FUEL ECONOMY, AND, LET'S FACE IT, MUCH BETTER LOOKS THAN CROSSOVERS, THE MIDSIZE SEDAN CONTINUES TO BE A KEY PLAYER IN THE GAME.



Japanese sedans continue to rule the midsize market, but competition from South Korea is coming on strong.

One of them is the Mazda 6, which came with a \$34,245 price tag—the most expensive car in the comparison. We're big fans of the 6; in fact we crowned it the winner of our 2014 midsize sedan Big Test. Although the competition has changed quite a bit since then, the Mazda has not. Mazda introduced a new engine and small face-lift in 2018, but everything else under the skin remains unchanged. Our 2021 Carbon Edition's optional 2.5-liter turbo-four sends 227 hp and a whopping 310 lb-ft of torque

through an aged six-speed automatic to the front wheels. The 6 made its mark as a driver's car, but can it win again seven years later?

At \$32,905, the 2021 Nissan Altima SR is the second most expensive sedan in the test. Our model came equipped with the variable-compression turbo engine, an engineering marvel that makes 236 hp and 267 lb-ft. Like with most Nissans these days, it features a continuously variable transmission, which sends power to the front wheels,

though the Altima is one of the few that offers all-wheel drive (with the 188-hp non-turbo 2.5). Introduced in 2018, the Altima hasn't received any updates since.

The 2021 Kia K5 surprised everyone with its Stinger-like design, aggressive character lines, and standard turbo engine. The K5 officially replaces the Optima, which was a respectable player in the segment. Our K5's standard 1.6-liter turbo-four sends 180 hp and 195 lb-ft to all four wheels, the first time a Kia midsize sedan has offered all-wheel drive.

Kia K5



Red leather seats and a flat-bottom steering wheel are traits of the GT-Line, the sportier-looking variant of the K5. The massive 10.3-inch touchscreen feels like it came from a Mercedes, and its T-shaped shifter is straight out of the Stinger.



Although the K5 gives a great first impression, its materials—like the hard plastics and leather—feel a bit rough and lower-quality compared to the rest of the segment.

Hyundai Sonata



The interior of our Sonata SEL Plus raised our eyebrows. Not only does it have the same 10.3-inch touchscreen as the K5, but it also comes with a full digital instrument cluster—the only one in this comparison.



With red stitching and accents throughout the interior, Hyundai's designers paid close attention to its spacious cabin.

Our \$31,430 GT-Line is trying to walk on the same path as the award-winning Telluride—delivering style and technology with a ton of value.

The 2021 Hyundai Sonata shares its platform with the K5. All-new for the 2020 model year, the Sonata impressed everyone with its fancy LED headlight array and smoothly contoured sheetmetal. Although the Sonata and K5 are vastly different outside, both get power from the same 1.6-liter turbo. (The Hyundai's base engine is a naturally

aspirated 2.5-liter, and AWD is not offered.) Crossing the checkout counter at \$32,174, our Sonata SEL Plus delivers great value and loads of technology.

The Subaru Legacy has been around for more than 30 years and entered its seventh generation with the 2020 model year. Although its design might

The LED strip features tiny laser-etched holes in the chrome slab.



not be as enticing as the rest of the field, it does a lot of things well. Our 2021 Limited trim came equipped with the base 2.5-liter four-cylinder boxer engine, which produces 182 hp and 176 lb-ft of torque, and it comes mated to a CVT. Like most Subarus, the Legacy has standard all-wheel drive. Our tester carried a sticker price of \$30,820.

Three years after its launch, the 10th-generation Honda Accord received a mild midcycle update for 2021. We opted for the EX-L trim, which gets a



The massive 11.6-inch touchscreen has great wow factor, but we were a bit let down by its content being buried in menus. Apple CarPlay and Android Auto are now displayed in a vertical configuration, which is great for drivers and front passengers.



Subaru didn't forget about anyone in the Legacy. Whether you're in the front or rear, heated seats, USB ports, and air vents are standard in the Limited trim.



Mazda 6



Mazda is trying to go premium, and the 6's cabin reflects that. The interior's clean look stands out against competitors, but so does the lack of technology. The 6 is almost a decade old, as are its electronic features and amenities.



Like in most Mazdas, interior space is not great. Although the 6 looks like a long sedan, the cozy cabin belies that appearance.



CVT and the base 1.5-liter turbo-four mill, producing 192 hp and 192 lb-ft of torque. With a \$32,285 price tag, the Accord EX-L brings a well-appointed cabin for a reasonable price.

The 2021 Toyota Camry, updated with a new touchscreen and more safety features, rounds out our field. Propelled by the base 2.5-liter four-cylinder engine with 203 hp and 184 lb-ft, our SE model represents the heart of the market thanks to its \$29,217 price—the lowest in this Big Test. Although the Camry is

available with AWD, our tester came with front drive and a short list of optional equipment. Could it win on value?

How Do They Drive?

The Honda felt like the best-engineered sedan. "It's as if Porsche was tasked with building a front-wheel-drive economical



Honda Accord

commuter sedan," senior features editor Jonny Lieberman said. Whether it's the suspension, steering, or powertrain, the Accord drives so well that it quickly distinguished itself from the rest of the group. Just take a look at some of the judges' notes: "Steering is excellent." "Its chassis and suspension tuning are great." "The quality of the engineering shines through." We could go on and on.

But not everything is hunky-dory. Although its CVT is one of the best in the segment, features editor Scott Evans

MIDSIZE SEDAN

| PERFORMANCE DATA | 2021 Honda Accord (EX-L) | 2021 Hyundai Sonata (1.6T SEL Plus) | 2021 Kia K5 GT-Line AWD | 2021 Mazda 6 SkyactivG Turbo (Carbon Edition) |
|------------------------|--------------------------|-------------------------------------|-------------------------|---|
| ACCELERATION TO MPH | | | | |
| 0-30 | 2.8 sec | 2.8 sec | 2.6 sec | 2.4 sec |
| 0-40 | 3.9 | 4.1 | 3.8 | 3.4 |
| 0-50 | 5.4 | 5.8 | 5.5 | 4.7 |
| 0-60 | 7.2 | 7.8 | 7.4 | 6.2 |
| 0-70 | 9.3 | 10.1 | 9.6 | 8.0 |
| 0-80 | 11.9 | 13.2 | 12.6 | 10.0 |
| 0-90 | 14.9 | 16.9 | 16.1 | 12.5 |
| 0-100 | — | — | — | 15.4 |
| PASSING, 45-65 MPH | 3.7 | 4.0 | 3.8 | 3.1 |
| QUARTER MILE | 15.5 sec @ 92.0 mph | 16.0 sec @ 87.5 mph | 15.7 sec @ 88.8 mph | 14.7 sec @ 97.6 mph |
| BRAKING, 60-0 MPH | 129 ft | 126 ft | 116 ft | 121 ft |
| LATERAL ACCELERATION | 0.82 g (avg) | 0.85 g (avg) | 0.86 g (avg) | 0.82 g (avg) |
| MT FIGURE EIGHT | 27.1 sec @ 0.63 g (avg) | 27.0 sec @ 0.64 g (avg) | 26.8 sec @ 0.64 g (avg) | 27.3 sec @ 0.63 g (avg) |
| TOP-GEAR REVS @ 60 MPH | 1,700 rpm | 1,700 rpm | 1,250 rpm | 2,000 rpm |



AS YOU MAY HAVE NOTICED, THERE ARE NO AMERICAN NAMEPLATES IN THIS TEST, BUT ALL EXCEPT THE MAZDA ARE MADE IN AMERICA.

argued it was tuned to save fuel. “It really doesn’t rev up the engine unless you need to get on the freeway,” he said. And although the 1.5-liter turbo feels great for a base engine, our enthusiast judges wanted more punch. However, getting the optional 252-hp 2.0-liter turbo adds big bucks to the transaction price. Decisions, decisions.

When we focus on the driving experience, the Mazda 6 shines. “The chassis dynamics are just excellent,” Evans said, despite its architecture being almost a

decade old. The 6’s ride is settled and almost free of body roll.

The Mazda’s 2.5-liter turbo feels way torquier than the Accord’s base 1.5. “You get a little torque steer, especially because the engine makes so much low-end torque,” executive editor Mac Morrison said. The six-speed automatic, though old, doesn’t hesitate much to downshift, and it shifts smoothly most of the time.

On paper, the performance champ is the Altima. It took just 5.8 seconds for the Nissan to get to 60 mph—the quickest car

here. The variable-compression engine delivers power quickly, but its tuning and the CVT failed to impress our judges. With the Palos Verdes Peninsula set as the stage for our test loop, the Altima’s transmission felt strained when going uphill on twisty roads or even when merging onto the freeway, and we generally feel there’s just too much continuous variability in this power-train; it never feels decisive.

But judges applauded the Altima’s body control and suspension damping.

| | 2021 Nissan Altima SR VC-Turbo | 2021 Subaru Legacy (Limited) | 2021 Toyota Camry SE |
|--|--------------------------------|------------------------------|-------------------------|
| | 2.3 sec | 3.0 sec | 2.7 sec |
| | 3.2 | 4.5 | 4.1 |
| | 4.4 | 6.2 | 5.7 |
| | 5.8 | 8.3 | 7.5 |
| | 7.5 | 10.8 | 10.0 |
| | 9.5 | 13.9 | 12.6 |
| | 11.8 | – | 15.7 |
| | 14.6 | – | – |
| | 2.8 | 4.2 | 3.9 |
| | 14.3 sec @ 99.0 mph | 16.4 sec @ 86.7 mph | 15.8 sec @ 90.4 mph |
| | 115 ft | 127 ft | 122 ft |
| | 0.90 g (avg) | 0.85 g (avg) | 0.85 g (avg) |
| | 26.5 sec @ 0.67 g (avg) | 27.1 sec @ 0.62 g (avg) | 27.4 sec @ 0.62 g (avg) |
| | 1,800 rpm | 1,500 rpm | 1,500 rpm |



Nissan's VC-Turbo engine is a technical marvel, but pairing it with a CVT is not optimal. A traditional automatic would be a better play.





THE ACCORD FELT LIKE THE BEST-ENGINEERED SEDAN; IT QUICKLY DISTINGUISHED ITSELF FROM THE REST OF THE GROUP.

Honda Accord

| | |
|------------------|--------------|
| TRACK, F/R | 63.0/63.4 in |
| TURNING CIRCLE | 38.3 ft |
| CURB WEIGHT | 3,206 lb |
| WEIGHT DIST, F/R | 60/40% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 37.5/37.2 in |
| LEGROOM, F/R | 42.3/40.4 in |
| SHOULDER ROOM | 58.3/56.5 in |
| CARGO VOLUME | 16.7 cu ft |

The steering drew compliments, too. “It just feels good,” Morrison said. “It feels fun. It feels like there’s performance underneath you.” That’s something we don’t see much in this segment.

We were split over the two Korean entries. Just a few months ago, we compared them during our Car of the Year program and ranked the Sonata in front

of its Kia cousin, given the broad range of trim levels and access to useful technologies. But there were cracks; during our COTY finalist loops, the Hyundai’s ride left us dissatisfied.

Although they are mechanically related, the K5 and Sonata feel different underneath. The Kia shows more confidence when tackling the twisty roads or broken pavement. “There’s a lot of youthful exuberance, a lot of the old Mazda zoom-zoom feeling,” Evans said.

The Sonata’s damping feels a bit firmer but busier. “It seems to react twice to almost every bump in the road,” Lieberman said. “And over imperfections it’s worse, as if the dampers have no rebound and just keep on compressing.”

We were a bit torn by their shared powertrain. “Getting the K5 moving is like squeezing toothpaste out of an empty

tube,” features editor Christian Seabaugh said. “It feels like you’re fighting for each and every mph.” Judges also complained about the engine vibration in the Sonata and the wind noise at freeway speeds.

Once the best-selling passenger car in America (for decades, at that), Toyota’s Camry does a fine job on the road, but it falls short of stellar. Toyota tuned the SE’s suspension so that almost every little bump makes its way into the cabin. Its four-cylinder engine, though a bit loud, delivers power quickly and feels adequate for a base mill. Morrison called its steering bland, and Evans called out the transmission for hunting for gears on the highway.

Those issues aside, the Camry is more composed than it likely needs to be. “No responses are all that impressive,” staff editor Conner Golden said, “but it’s above average for something that is unlikely

DRIVETRAIN LAYOUT FRONT-ENGINE, FWD





FOR LESS THAN \$30,000, THE CAMRY OFFERS DECENT HANDLING, PLENTY OF TECHNOLOGY, AND TONS OF INTERIOR ROOM.

Toyota Camry

| | |
|------------------|--------------|
| TRACK, F/R | 62.2/62.6 in |
| TURNING CIRCLE | 38.0 ft |
| CURB WEIGHT | 3,373 lb |
| WEIGHT DIST, F/R | 60/40% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 38.3/38.0 in |
| LEGROOM, F/R | 42.1/38.0 in |
| SHOULDER ROOM | 57.7/55.7 in |
| CARGO VOLUME | 15.1 cu ft |

to ever see anything curvier than the interstate.”

The Legacy might seem like a shy player with a flourishing soul—its design is not alluring, but it gets attention everywhere else. “I approached the Subaru with somewhat low expectations,” associate editor Eleonor Segura said, “but my opinion quickly changed when

I buckled up and got it moving along the road.” Its ride is settled and controlled, with minimal body motion when driving over pavement undulations—though we’d love to experience less body roll. Its engine is gutless (8.3 seconds to 60 mph, the slowest by far), but the Legacy feels like an honest sedan.

Technology and Amenities

Sit inside the Hyundai or Kia, and you might confuse the cabin for a Mercedes. The 10.3-inch touchscreen delivers a great first impression and adds refinement. Although the map graphics are dated, the system is quick and intuitive to navigate. “The interiors of both the K5 and the Sonata are stylistic triumphs when compared to the other contenders, particularly with the user interface,” Golden said. Our Sonata came equipped

The Sonata’s 10.3-inch screen comes with old-fashioned graphics, and it’s easy to use.



with a fully digital instrument cluster, something the K5 lacked.

But like its exterior design, the K5 shows its sportiness inside. Our tester featured a flat-bottom steering wheel, red leather seats, and an actual shifter instead of the Sonata’s button-operated transmission. The good impression continues with

DRIVETRAIN LAYOUT FRONT-ENGINE, FWD





THE KIA K5 SURPRISED EVERYONE WITH ITS STINGER-LIKE DESIGN, AGGRESSIVE CHARACTER LINES, AND STANDARD TURBO ENGINE.

Kia K5

| | |
|------------------|--------------|
| TRACK, F/R | 63.7/64.0 in |
| TURNING CIRCLE | 36.0 ft |
| CURB WEIGHT | 3,449 lb |
| WEIGHT DIST, F/R | 59/41% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 38.4/37.4 in |
| LEGROOM, F/R | 46.1/35.2 in |
| SHOULDER ROOM | 58.0/56.1 in |
| CARGO VOLUME | 16.0 cu ft |

the panoramic roof on both sedans, but the quality of the materials falls short. “All of the materials look nice at first glance, but they don’t feel as premium as advertised,” Golden said of the K5, adding he’d rather spend his time in the Sonata.

Besides offering better materials, the Accord’s cabin shines by doing most everything right. It’s not flashy like the

K5 or Sonata, but you might think you’re riding in an Acura. The faux wood trim looks and feels like the real thing, and although it could use a more modern infotainment interface, wireless Apple CarPlay and Android Auto improve the experience. It lacks the latest technologies, but the cabin doesn’t feel like it’s missing much.

Seabaugh argued that although the Accord’s cabin looks nice, it needs more than the black leather, textured plastics, and faux brown wood. “It’s perfectly acceptable but not exactly segment leading,” he said.

When sitting in the sub-\$30K Camry, we felt poised to pull out of an Avis parking lot. Its interior—from the lack of comfort amenities to the small screen—felt subpar compared to the rest of the field. That’s the sacrifice you make to



The K5 GT-Line carries sporty interior traits, such as GT badges throughout the cabin.

save a few grand. Upgrade by a trim level (which is still in our testing ballpark), and fitments are pretty much on par.

The 2021 Camry has a new 7.0-inch “floating” touchscreen with an updated infotainment system that’s a definite improvement, but its graphics still look like they were designed a decade ago. We appreciate the standard leather-wrapped

DRIVETRAIN LAYOUT FRONT-ENGINE, FWD





OUR NISSAN ALTIMA TEST CAR CAME EQUIPPED WITH THE VARIABLE-COMPRESSION TURBO ENGINE, AN ENGINEERING MARVEL.

Nissan Altima

| | |
|------------------|--------------|
| TRACK, F/R | 62.8/62.8 in |
| TURNING CIRCLE | 37.4 ft |
| CURB WEIGHT | 3,416 lb |
| WEIGHT DIST, F/R | 61/39% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 38.0/36.7 in |
| LEGROOM, F/R | 43.8/35.2 in |
| SHOULDER ROOM | 58.2/57.1 in |
| CARGO VOLUME | 15.4 cu ft |

steering wheel and automatic climate control, but the cabin left us wanting more—despite the cost savings. “I expected this interior to be a little better, but it’s not,” Morrison said.

Perhaps most disappointing was the Altima’s lack of automatic climate control given its near-\$33,000 price. It seems odd that Toyota offers a single-zone

automatic climate control in the lower-trim Camry, but the Nissan’s second-highest trim doesn’t.

The rest of the Altima’s interior was bittersweet. We’re fans of the contrast stitching across the cabin and its intuitive infotainment system, but there wasn’t anything interesting that stood out. “It’s like putting lipstick on a pig in some ways,” Morrison said. “The interior is rather plain, but it’s at least better than the Camry’s.”

The Mazda 6 has aged well outside, but age caught up with it inside. Starting with its ancient, fiddly infotainment system and small screen, the 6 seems to be stuck in time. Although we appreciate wireless CarPlay, most of the technology in the 6 is behind the curve. The lack of a touchscreen makes it harder to control anything, and even though the rotary

control works well, everything is buried in distracting layers of menus.

Aside from its technology, Mazda interior designers can feel proud of their work—nearly 10 years into its life cycle, the cabin continues to hold up in a premium and elegant way. The mix of red contrast stitching, aluminum trim, and the two-level dash deliver a plush feeling in the cabin. “It’s an undeniably nice place to be, but the goalposts have moved. A 1975 Rolls-Royce is also nice, but this is a different time, different priorities,” Golden said.

Design is probably Subaru’s weakest point, and that shows in the Legacy’s cabin. We’re fans of the 11.6-inch infotainment screen, especially now that CarPlay works in vertical form. Apart from that, there’s nothing super interesting. “Most of the materials on

DRIVETRAIN LAYOUT FRONT-ENGINE, FWD





THE HYUNDAI SONATA IMPRESSED EVERYONE WITH ITS FANCY LED HEADLIGHT ARRAY AND SMOOTHLY CONTOURED SHEETMETAL.

Hyundai Sonata

| | |
|------------------|--------------|
| TRACK, F/R | 63.4/63.7 in |
| TURNING CIRCLE | 35.9 ft |
| CURB WEIGHT | 3,322 lb |
| WEIGHT DIST, F/R | 60/40% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 40.0/37.4 in |
| LEGROOM, F/R | 46.1/34.8 in |
| SHOULDER ROOM | 57.9/56.1 in |
| CARGO VOLUME | 16.0 cu ft |

the interior are pretty middle of the road, though the humongous screen looks quite premium,” Lieberman said. “While there’s debate as to its functionality, tasks like pairing a phone are simple.” Front passengers will enjoy the well-padded seats and a built-in tray in the dash-board—the perfect place for your phone or wallet.

Space for You and Your Stuff

The Accord, Camry, and Legacy stood out for their ample legroom and headroom, with the Honda offering the most supportive seats and class-leading rear-seat legroom. “I could happily spend a day back here,” Seabaugh said. The K5, Sonata, and Altima fall right behind them, with the Kia and Nissan offering slightly more legroom than the Hyundai.

Although Mazda claims the 6 has more rear-seat room than the Koreans and the Altima, it doesn’t feel like that in real life. “It’s comfortable and has plenty of legroom, but head- and shoulder room are right on the edge of what I consider cozy,” the 5-foot-9 Evans said. “A taller person might find it a little too snug.”

With two USB ports, air vents, and heated seats, the Legacy was the best-equipped sedan for rear-seat passengers.



Subaru Legacy

At this price point, this Subie is the only one that offers all of these amenities for those seated in the back. The Accord, 6, and Sonata back seats feature air vents and at least one USB port (two for the Accord and 6), but neither had heated rear seats. The Altima and K5 came with USB ports sans air vents, and although our Camry lacked air vents and USB ports, Toyota offers the latter for an additional \$129.

DRIVETRAIN LAYOUT FRONT-ENGINE, FWD





ALTHOUGH THE SUBARU'S DESIGN MIGHT NOT BE AS ENTICING AS THE REST OF THE FIELD, THE LEGACY DOES A LOT OF THINGS WELL.

Subaru Legacy

| | |
|------------------|--------------|
| TRACK, F/R | 62.2/63.4 in |
| TURNING CIRCLE | 36.8 ft |
| CURB WEIGHT | 3,552 lb |
| WEIGHT DIST, F/R | 58/42% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 39.4/37.3 in |
| LEGROOM, F/R | 42.8/39.5 in |
| SHOULDER ROOM | 58.1/57.4 in |
| CARGO VOLUME | 15.1 cu ft |

Safety

The Honda, Toyota, and Subaru each come with a suite of safety technologies meant to take stress off the driver and improve safety. The Accord, Camry, and Legacy all come standard with lane keep assist, adaptive cruise control, automatic emergency braking, and more. Toyota Safety Sense was updated for the 2021

Camry, adding a system that alerts the driver to pedestrians or oncoming vehicles when making a left turn at an intersection.

But on the road, all these systems behaved differently. Overall, we preferred Honda Sensing, which kept the Accord centered in its lane and decelerated comfortably when approaching a slower vehicle. “It’s one of the best Level 2 systems in its class,” Evans said. The Legacy’s system has excellent lane centering, but its random, excessive warning chimes became annoying, putting it second on our list. Toyota Safety Sense’s lane centering had a hard time reading some lane markings but was better than those in the Hyundai or Kia. And although Nissan offers the well-rated ProPilot Assist on the Altima, it’s only offered on 2.5-liter Altimas. Lastly,

Mazda’s system seems as old as the 6, lacking the refinement we’ve seen from the rest of the Japanese sedans.

In an exceptional scenario, all of the midsize sedans here have received great IIHS safety ratings. The Altima, Accord, Camry, 6, K5, and Legacy scored the highest score—Top Safety Pick+—and the Sonata received the Top Safety Pick rating, the difference a result of its Marginal headlight score in lower trims. NHTSA, on the other hand, rates each with five stars—the highest mark possible. It’s rare to see this abundance of high safety ratings across the segment.

Fuel Economy

Given the mix of turbocharged and naturally aspirated engines in this test, this group’s EPA numbers are—predictably—all over the map. Once again, the Accord

DRIVETRAIN LAYOUT FRONT-ENGINE, AWD





WE'RE BIG FANS OF THE MAZDA 6; IN FACT, WE CROWNED IT THE WINNER OF OUR 2014 MIDSIZE SEDAN BIG TEST.

Mazda 6

| | |
|------------------|--------------|
| TRACK, F/R | 62.8/62.4 in |
| TURNING CIRCLE | 36.8 ft |
| CURB WEIGHT | 3,519 lb |
| WEIGHT DIST, F/R | 60/40% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 37.4/37.1 in |
| LEGROOM, F/R | 42.2/38.7 in |
| SHOULDER ROOM | 55.9/55.1 in |
| CARGO VOLUME | 14.7 cu ft |

stood out, delivering 30/38 mpg city/highway. The Camry was right behind it, with 28/39 mpg, and the Sonata came in third with 27/37 mpg. The Legacy, K5, and Altima snagged fourth through sixth place, respectively, leaving the 6 as the least efficient sedan with 23/31 mpg. Generally speaking, these are fuel-efficient sedans, but the difference

between the Accord and the 6 is huge and will impact your wallet. Although the 6 and the Altima in this test had the most powerful engines, the Nissan was significantly more efficient at 25/34 mpg.

What's Left in Your Wallet?

We all look at value in different ways, but the Camry and Legacy make a good case for themselves. For less than \$30,000, the Camry offers decent handling, plenty of technology, and tons of interior room. Likewise, the Legacy treats passengers right with a plethora of amenities for less than \$31,000. Honda has always positioned itself as delivering that extra touch of elegance for the money, and the Accord reflects that. As for the Sonata and K5—although their plastics, trims, grain, and gloss feel inferior—they put up a good fight with their modern look inside.

The Mazda's high starting price is a sign of the automaker trying to go premium, but its old architecture and technology prove otherwise. The Altima's lack of basic creature comforts at almost \$33,000 is hard to justify; we're glad to see the turbo engine offered for a reasonable price, but why not make the cabin more pleasant?

But value also extends well past signing on the dotted line. MotorTrend Group subsidiary IntelliChoice tracks the five-year cost of ownership of every vehicle on the road. As you can see in the chart to the right, the Accord and Legacy have the best retained value, and the Camry gets a good score. The Sonata and Mazda 6 are average, and the Altima is rated as poor. Given that the K5 is all-new for 2021, it's too early for IntelliChoice to have conclusive data; the outgoing 2020 Optima earned a mediocre rating, however.

DRIVETRAIN LAYOUT FRONT-ENGINE, FWD





IntelliChoice data is based on five years of ownership at 14,000 miles driven per year. Target purchase price includes destination and average applicable state taxes applied to a transaction price between invoice and retail, based on applicable incentives.

| | 2021 Honda Accord (EX-L) | 2021 Hyundai Sonata (1.6T SEL Plus) | 2021 Kia K5 GT-Line AWD | 2021 Mazda6 SkyactivG Turbo (Carbon Edition) | 2021 Nissan Altima SR VC-Turbo | 2021 Subaru Legacy (Limited) | 2021 Toyota Camry SE |
|-------------------------------------|--------------------------|-------------------------------------|-------------------------|--|--------------------------------|------------------------------|----------------------|
| AVG STATE FEES | \$948 | \$962 | \$910 | \$992 | \$898 | \$952 | \$953 |
| DEPRECIATION | \$13,677 (45%) | \$18,806 (59%) | \$14,229 (50%) | \$17,855 (53%) | \$15,874 (55%) | \$16,812 (53%) | \$16,015 (50%) |
| FINANCING | \$3,291 | \$3,512 | \$3,144 | \$3,672 | \$3,183 | \$3,473 | \$3,502 |
| INSURANCE | \$7,126 | \$9,072 | \$7,509 | \$7,978 | \$8,503 | \$8,557 | \$8,274 |
| FUEL | \$6,065 | \$6,385 | \$5,631 | \$6,974 | \$5,889 | \$5,974 | \$5,527 |
| MAINTENANCE | \$3,039 | \$2,971 | \$2,404 | \$2,757 | \$3,041 | \$3,143 | \$2,302 |
| REPAIRS | \$735 | \$650 | \$633 | \$778 | \$188 | \$197 | \$650 |
| 5-YEAR COST OF OWNERSHIP | \$34,881 | \$42,358 | \$34,460 | \$41,006 | \$37,576 | \$39,108 | \$37,222 |
| INTELLICHOICE TARGET PURCHASE PRICE | \$30,076 | \$32,086 | \$28,740 | \$33,551 | \$29,077 | \$31,742 | \$32,006 |

* Insufficient data for K5; using data from predecessor Optima nameplate.

Which Is the Best Midsize Sedan?

Depending on your priorities, this answer can change, and we tried to highlight those areas so you can make an informed decision. As to our preferences, we spent an exhausting socially distanced week evaluating all seven players back to back on our South Bay road circuit (which is, coincidentally, also used by Toyota, Honda, BMW, Mercedes-Benz, and Stellantis).

Despite the shrinking number of players in the segment, each entrant brought unique values to the table, from handling to design to technology.

The Altima's quick engine was quite noticeable, but its unremarkable interior, loud transmission, and low value had us wishing for more.

The Camry stands strong on value, but Toyota needs to broaden its standard amenities and fine-tune its suspension. Despite being the most popular player in the segment, it can and should be better.

If the Legacy had a more attractive design and a punchier engine, we'd be more entranced with it. But Subaru knows its loyal buyers and has delivered on their priorities with the Legacy.

The Kia Optima didn't impress or disappoint, but the new K5 is changing that. With the best-looking design, awesome technology, and broad value, Kia is marching up the right path.

Although the 6 is long in the tooth, Mazda continues to deliver a driver's car. The 6's great handling, strong chassis, and punchy engine make it the car for those who care about driving. We just wish its technology were updated.

We've praised the Sonata in the past for its design, value, and broad lineup. This time, however, it fell short against its core competitors. The Sonata continues to be a great midsize sedan with tons of technology and decent handling.

It was hard for us to find any strong criticisms in the Accord. Simply said, there isn't a better midsize sedan. The Accord is fun to drive, and it delivers all of the things people look for in a midsize sedan.

RANKING, WORST TO FIRST

7th Place: Nissan Altima

We've seen what Nissan can do with the new Sentra and Rogue. We hope the next Altima follows that path.

6th Place: Toyota Camry

In a segment known for blandness, the Camry conspicuously fails to bring anything spicier than a value proposition.

5th Place: Mazda 6

The former king of the segment has been resting on its laurels. The 6 continues to be the driver's car, but Mazda's failure to update it has kicked it off the podium.

4th Place: Hyundai Sonata

Hyundai continues its march of success, and the Sonata is proof of that. If its engineering can catch up to its looks, the Sonata will be sitting in the front row.

3rd Place: Subaru Legacy

It might be the shy kid in the class, but once you sit in the driver's seat, the Legacy will show its charm. A well-deserved podium finisher.

2nd Place: Kia K5

Once again, Kia has shown us what it's capable of. The K5 is an impressive example of what the Korean brand can accomplish.

1st Place: Honda Accord

The Accord raises the bar. Spacious, refined, roomy, elegant—it's the one we'd all buy. By unanimous decision, Honda took home the gold medal. ■









WINNER
2021 Honda
Accord (EX-L)



| | |
|----------------------------|---|
| DRIVETRAIN LAYOUT | Front-engine, FWD |
| ENGINE TYPE | Turbocharged I-4, alum block/head |
| VALVETRAIN | DOHC, 4 valves/cyl |
| DISPLACEMENT | 91.4 cu in/1,498cc |
| COMPRESSION RATIO | 10.3:1 |
| POWER (SAE NET) | 192 hp @ 5,500 rpm |
| TORQUE (SAE NET) | 192 lb-ft @ 1,600 rpm |
| REDLINE | 6,600 rpm |
| WEIGHT TO POWER | 16.7 lb/hp |
| TRANSMISSION | Cont variable auto |
| AXLE/FINAL DRIVE RATIO | 3.24:1/1.31:1 |
| SUSPENSION, FRONT; REAR | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar |
| STEERING RATIO | 11.8:1 |
| URNS LOCK TO LOCK | 2.3 |
| BRAKES, F; R | 11.5-in vented disc; 11.1-in disc, ABS |
| WHEELS | 7.5 x 17-in cast aluminum |
| TIRES | 225/50R17 94V Michelin Energy Saver A/S (M+S) |
| CONSUMER INFO | |
| BASE PRICE | \$32,285 |
| PRICE AS TESTED | \$32,285 |
| STABILITY/TRACTION CONTROL | Yes/Yes |
| AIRBAGS | 8: Dual front, front side, f/r curtain, front knee |
| BASIC WARRANTY | 3 years/36,000 miles |
| POWERTRAIN WARRANTY | 5 years/60,000 miles |
| ROADSIDE ASSISTANCE | 3 years/36,000 miles |
| FUEL CAPACITY | 14.8 gal |
| EPA CITY/HWY/COMB ECON | 30/38/33 mpg |
| ENERGY CONS, CITY/HWY | 112/89 kWh/100 miles |
| CO2 EMISSIONS, COMB | 0.59 lb/mile |
| RECOMMENDED FUEL | Unleaded regular |



| 2021 Hyundai Sonata (1.6T SEL Plus) | 2021 Kia K5 GT-Line AWD | 2021 Mazda 6 SkyactivG Turbo (Carbon Edition) | 2021 Nissan Altima SR VC-Turbo | 2021 Subaru Legacy (Limited) | 2021 Toyota Camry SE |
|---|---|--|---|---|---|
|  |  |  |  |  |  |
| Front-engine, FWD | Front-engine, AWD | Front-engine, FWD | Front-engine, FWD | Front-engine, AWD | Front-engine, FWD |
| Turbocharged I-4, alum block/head | Turbocharged I-4, alum block/head | Turbocharged I-4, alum block/head | Turbocharged I-4, alum block/head | Flat-4, alum block/heads | I-4, alum block/head |
| DOHC, 4 valves/cyl | DOHC, 4 valves/cyl | DOHC, 4 valves/cyl | DOHC, 4 valves/cyl | DOHC, 4 valves/cyl | DOHC, 4 valves/cyl |
| 97.5 cu in/1,598cc | 97.5 cu in/1,598cc | 151.9 cu in/2,498cc | 120.2-121.9 cu in/1,970-1,997cc | 152.4 cu in/2,498cc | 151.9 cu in/2,487cc |
| 10.5:0:1 | 10.5:1 | 10.5:1 | 8.0:1-14.0:1 | 12.0:1 | 13.0:1 |
| 180 hp @ 5,500 rpm | 180 hp @ 5,500 rpm | 227 hp @ 5,000 rpm* | 236 hp @ 5,600 rpm* | 182 hp @ 5,800 rpm | 203 hp @ 6,600 rpm |
| 195 lb-ft @ 1,500 rpm | 195 lb-ft @ 1,500 rpm | 310 lb-ft @ 2,000 rpm* | 267 lb-ft @ 4,000 rpm* | 176 lb-ft @ 4,400 rpm | 184 lb-ft @ 5,000 rpm |
| 6,500 rpm | 6,500 rpm | 6,000 rpm | 6,000 rpm | 6,000 rpm | 6,750 rpm |
| 18.5 lb/hp | 19.2 lb/hp | 15.5 lb/hp | 14.5 lb/hp | 19.5 lb/hp | 16.6 lb/hp |
| 8-speed automatic | 8-speed automatic | 6-speed automatic | Cont variable auto | Cont variable auto | 8-speed automatic |
| 3.37:1/2.14:1 | 3.51:1/2.23:1 | 4.09:1/2.45:1 | 5.25:1/2.01:1 | 3.70:1/2.07:1 | 2.80:1/1.89:1 |
| Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar | Struts, coil springs, anti-roll bar; multilinks, coil springs, anti-roll bar | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar |
| 13.3:1 | 13.3:1 | 15.5:1 | 15.3:1 | 13.5:1 | 13.8:1 |
| 2.7 | 2.7 | 2.8 | 2.7 | 2.7 | 2.6 |
| 12.8-in vented disc; 11.8-in disc, ABS | 12.0-in vented disc; 11.2-in disc, ABS | 12.6-in vented disc; 10.9-in vented disc, ABS | 11.7-in vented disc; 11.5-in disc, ABS | 12.4-in vented disc; 11.8-in vented disc, ABS | 12.0-in vented disc; 11.1-in disc, ABS |
| 8.0 x 19-in cast aluminum | 7.5 x 18-in cast aluminum | 7.5 x 19-in cast aluminum | 8.0 x 19-in cast aluminum | 7.5 x 18-in cast aluminum | 8.0 x 18-in cast aluminum |
| 245/40R19 94W Pirelli P Zero All Season (M+S) | 235/45R18 94V Pirelli P Zero All Season (M+S) | 225/45R19 92W Falken Ziex AE001 A/S (M+S) | 235/40R19 92V Hankook Kinergy GT (M+S) | 225/50R18 95V Yokohama Avid GT (M+S) | 235/45R18 94V Bridgestone Turnaza EL440 (M+S) |
| \$29,305 | \$30,185 | \$33,745 | \$31,575 | \$30,820 | \$27,480 |
| \$32,174 | \$31,430 | \$34,245 | \$32,905 | \$30,820 | \$29,217 |
| Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 9: Dual front, f/r side, f/r curtain, driver knee | 9: Dual front, f/r side, f/r curtain, driver knee | 6: Dual front, front side, f/r curtain | 10: Dual front, f/r side, f/r curtain, front knee | 8: Dual front, front side, f/r curtain, driver knee, passenger thigh | 10: Dual front, f/r side, f/r curtain, front knee |
| 5 years/60,000 miles | 5 years/60,000 miles | 3 years/36,000 miles | 3 years/36,000 miles | 3 years/36,000 miles | 3 years/36,000 miles |
| 10 years/100,000 miles | 10 years/100,000 miles | 5 years/60,000 miles | 5 years/60,000 miles | 5 years/60,000 miles | 5 years/60,000 miles |
| 5 years/unlimited miles | 5 years/60,000 miles | 3 years/36,000 miles | 3 years/36,000 miles | 3 years/36,000 miles | 2 years/unlimited miles |
| 15.9 gal | 15.8 gal | 16.4 gal | 16.2 gal | 18.5 gal | 15.8 gal |
| 27/37/31 mpg | 26/34/29 mpg | 23/31/26 mpg | 25/34/29 mpg | 27/35/30 mpg | 28/39/32 mpg |
| 125/91 kW-hrs/100 miles | 130/99 kWh/100 miles | 147/109 kWh/100 miles | 135/99 kWh/100 miles | 125/96 kWh/100 miles | 120/86 kWh/100 miles |
| 0.63 lb/mile | 0.67 lb/mile | 0.75 lb/mile | 0.68 lb/mile | 0.64 lb/mile | 0.60 lb/mile |
| Unleaded regular | Unleaded regular | Unleaded regular | Unleaded regular | Unleaded regular | Unleaded regular |

*Regular fuel ratings; 93 octane raises Mazda to 250 hp @ 5,000 rpm and 320 lb-ft @ 2,500 rpm on 93 octane; Nissan to 248 hp @ 5,600 rpm and 273 lb-ft @ 4,000 rpm



When it comes to off-roading, Jeep sets the standard, especially at reasonable price levels. Other brands offer all-wheel drive, and a few of them build a seriously capable off-roader or two if you're willing to pay, but no one builds a trail-ready model in every SUV segment like Jeep does. And if you want to keep the price less than \$40,000 and still get serious off-road performance, Jeep is the only game in town.

Or was. The Ford Bronco Sport Badlands is finally here to crash the trail party. And in the battle for budget off-road supremacy, it most directly challenges the Jeep Compass Trailhawk.

WORDS SCOTT EVANS
PHOTOGRAPHY WILLIAM WALKER



The Ford Bronco Sport and Jeep Compass are practically photocopies dimensionally, but one handily outperforms the other, both on-road and off.

OFF THE ROAD WE

THERE'S ONLY ONE
CHOICE FOR ROCK
CRAWLING IN A
CROSSOVER SUV

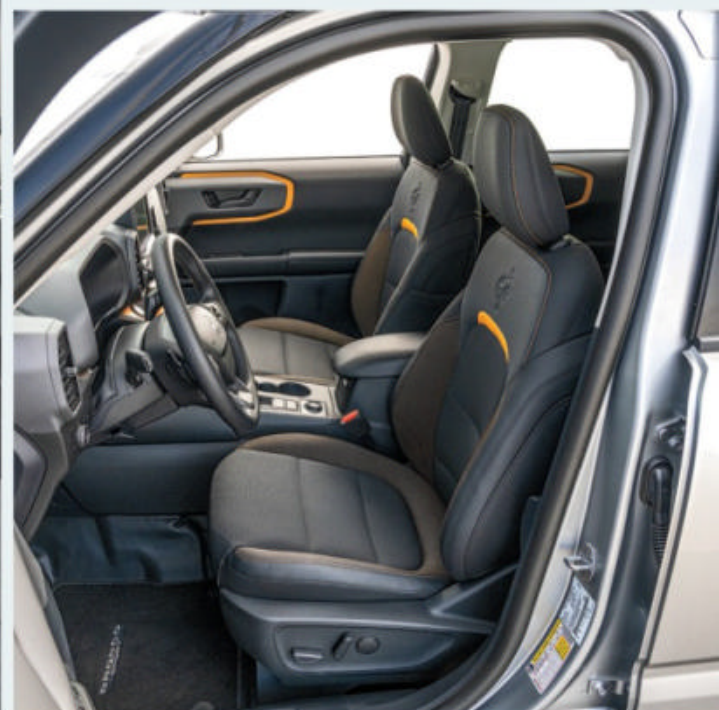


GO



Bronco Sport

With all the space to put stuff in the Bronco Sport, the only options we miss are the Badlands package's wireless phone charger and leather-wrapped wheel.



The Contenders

Jeep's insistence on covering every bit of SUV-market white space made us think hard about which model to invite to this comparison. The Renegade is only slightly smaller than the Compass, which is only slightly smaller in turn than the Cherokee. When you drill down on it, though, the Compass is the best match against the Bronco Sport. In nearly every measure, the Ford is practically a photocopy of the Jeep.

Check it: The Jeep has 8.5 inches of ground clearance; the Ford has 8.8. The Jeep has a 30.3-degree approach angle, 24.4-degree breakover angle, and 33.6-degree departure angle. The Ford's comparable measurements are 30.4, 20.4, and 33.1 degrees. The Jeep rides on a 103.8-inch wheelbase to the Ford's 105.1. The Jeep is slightly longer overall and narrower in width, but only by tenths of an inch.

The two even cost about the same. The Ford starts at \$34,315 for the Badlands trim to the Jeep's \$32,310 for the Trailhawk trim, but as tested, the Jeep is more expensive at \$38,335 to the Ford's \$35,905.



There's one set of numbers that doesn't match, though. Jeep only offers the Compass with its old 2.4-liter naturally aspirated four-cylinder engine. It makes 180 horsepower and 175 lb-ft of torque, which is adequate but not impressive output for a motor of this size. This engine has to propel an SUV that weighs 3,803 pounds as tested. The Ford, meanwhile, upgrades the Bronco Sport Badlands trim from a 1.5-liter turbocharged three-cylinder to a 2.0-liter turbocharged four-cylinder with 250 hp and 277 lb-ft, and all that power only has to move 3,677 pounds.



The only way you get more power in a Jeep of somewhat comparable size is to buy the larger, more expensive Cherokee Trailhawk, which boasts a V-6 engine with 271 hp and 239 lb-ft. But that Cherokee trips the register at \$4,735 more to start than a Compass Trailhawk and has a final price above \$40,000 when similarly specced.

On the Trail

Let's cut to the chase. The name "Trailhawk" is no longer the standard by which compact SUV off-road packages will be measured. That honor now belongs to "Badlands." The Bronco Sport so thoroughly outperformed the Compass off-road, there's no saying it any other way. Other Jeep Trailhawks should take notice.

"I'd like to know what trail this was rated on," senior features editor Jonny Lieberman said, pointing to the Trail Rated badge on the Jeep's side. "Sure wasn't the Rubicon, as the Compass struggled to make it up the not-so-tough Swansea-Cerro Gordo Road. Whereas I can't remember the Bronco Sport's forward progress ever being stopped, off-roading with the Jeep was an exercise in frustration."

The Jeep's problems came down to three Ts: tires, torque, and tank. The tires weren't good enough, the torque didn't exist, and the gas tank was way too small.





Compass Trailhawk

You tell us: Where would you put your phone or anything else in the Jeep Compass' cockpit? You can't even see the cupholders from this angle.



Let's go down the list. First, the Compass Trailhawk's Falken Wildpeak H/T tires look about half as aggressive as the Bronco Sport Badlands' Falken Wildpeak A/T3W tires, and they performed half as well. Don't take it from us, though: Falken on its own website rates the H/T's off-road capability as a 2.5 out of 5 and the Bronco's A/T3W's as a 4.0. The H/T is an all-season tire with a Mud and Snow rating that scores higher, per Falken, in quietness, tread life, and fuel efficiency. Jeep chose this as its Trailhawk tire option. Ford, to its credit, chose a Pirelli Scorpion all-terrain tire as the standard Badlands tire but also gives you this more aggressive all-terrain option. The Ford's tires are also wider, giving them a larger footprint on loose surfaces. Too often we faced situations where the Jeep's tires spun from lack of grip, were too narrow to place on a better surface, or both.

You could drop hundreds on a better set of tires for the Jeep, which is already \$2,590 more expensive as tested, but you'd still be stuck with low torque. It used to be the 2.4 only showed up as the rental-grade base engine in a lot of FCA products, but for some reason, it's the only engine you can get in a Compass at any price. For perspective, compact cars weighing 800 pounds less than a Compass make more torque from their newer, similarly sized naturally aspirated four-cylinders.



Climbing the Inyo Mountains, the Jeep wheezed worse than a resolution chaser on their first jog of the new year. As we approached the top of the 9,400-foot ridge, the Compass got hung up on 4-inch-tall rocks in steeper parts of the trail, engine moaning away at 2,000 rpm, torque converter slipping, transmission temperature rising, and zero forward progress achieved. If you sat there and cooked the transmission long enough, it would sometimes eventually stumble over the obstacle, but more often than not, the only strategy was to back up and hit it with some speed and hope it didn't bust a tire, or worse. And that's with every off-road feature—4WD Lock and 4WD Low and Rock mode—engaged. The Bronco Sport ran up nearly the entire trail in its Mud and Ruts mode, not Rock Crawl.

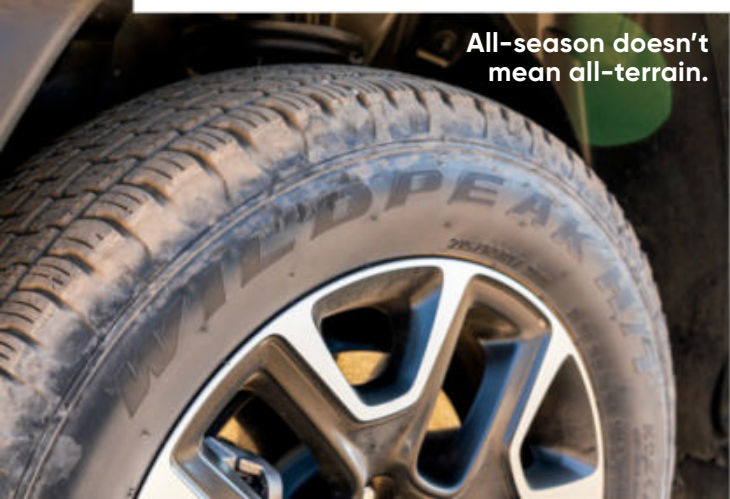
Let's take a second here to talk about the misleading "4WD Low" button. You can skip this part if you don't care about technical stuff, but it's important to know what the vehicle can and can't do.

The Compass Trailhawk is not four-wheel drive; it's all-wheel drive. It does not have a low-range gear like a Wrangler. It doesn't even have a transfer case. It's the same transverse, front-drive-based nine-speed automatic transmission

with a power take-off and open front and rear differentials as every other Compass. "4WD Low" is actually first gear. Normally, the Trailhawk just starts in second and takes advantage of an exclusive shorter final drive ratio to compensate. When you press that button, all it does is start in first.

Of course, you can only engage "4WD Low" (first gear) if you're in Rock Crawl mode with 4WD Lock engaged. That's a lot of settings, but all it really does is move some ones and zeroes around, telling the transmission and brakes to do different things. Unlike the Bronco Sport Badlands, it has no locking rear axle. Jeep relies entirely on the brakes to lock up a spinning wheel and force power to the opposite side of the car, front and rear. You, as the driver, have little control over it. And because so much of the Jeep's off-road capability is wrapped in electronic work-arounds, you can't turn off traction and stability control, even if the light saying you did goes on.

Back to the Ts. The last one doesn't help with traction, but it does limit how many rocks you can climb over. The Compass has a 13.5-gallon fuel tank that, despite the Jeep's superior EPA ratings, was half empty by the end of the 36-mile trail when the Bronco Sport was still three-quarters full. Last thing you want to worry about off-road is running out of gas.



All-season doesn't mean all-terrain.

COMPARISON

Fine, so the Jeep has limitations, but its relative shortcomings don't necessarily make the Ford the winner, or even good. But the Ford is good. In fact, it's great.

With actual off-road tires, a turbo-charger that not only makes way more torque but also negates the effects of altitude, and a locking rear axle, the Bronco Sport was right at home off-road. (The locking rear works by way of fully closing clutches on the rear axle halfshafts, which limits how long you can use it before it overheats, but at least it's there and it works.) And don't think doing this test at sea level would've done the Jeep any favors. During our photo shoot at a much lower altitude, the Trailhawk still struggled with easy obstacles.

A big part of the Ford's trail confidence is evident in how well it takes a hit. Hydraulic bumpstops in the front shock absorbers and lots of suspension travel all around let the Badlands absorb every impact on every obstacle, rock, or hole, much like a Jeep Wrangler. The Compass, meanwhile, doesn't take a hit nearly as well, and the loud bangs from the suspension every time it reaches the top or bottom of its travel are cringey enough to make off-road amateurs think they've seriously damaged their vehicle.

When it comes to taking a hit on the chin, though, the Jeep claws back some points. Both vehicles have black plastic covers extending below the front bumper and back to the frame for aerodynamic and cooling purposes. Only Jeep, though, had the good sense to secure that piece ahead of and slightly above the front crossmember. Ford wrapped it underneath the crossmember, making it more susceptible to impacts. The leading edge of the Jeep's frame and skidplate got dinged; the Ford ended up with a hole in its plastic cover, plus the frame underneath got beat up.

The Jeep also gets a point for its sloping hood, which gives the driver an



unobstructed view of the trail ahead. The Ford's flat, blocky hood gets in the way when trying to position the vehicle carefully on an obstacle. Ford rectifies this with cameras, but with no context on screen, it's difficult to figure out where the front wheels are going. Overlaying guidelines for the tires on the screen, like Jeep does on the Wrangler, would go a long way.

A point here or there doesn't change the fact that despite having nearly identical clearance and approach/breakover/departure angles, the Compass Trailhawk felt like it was at its mechanical limit while the Bronco Sport Badlands felt like it was simply at the limit of its ground clearance. Give the Ford a 2-inch lift, and it wouldn't have broken a sweat.

On the Way Home

The Bronco Sport dominated off-road, and it ain't too shabby on the road, either. The seven-hour round trip to the trailhead gave us plenty of time to experience both crossovers as the average driver will. In this context, it's a much closer comparison.

Cruising down the freeway and cutting through small towns, the two drive similarly. There aren't any meaningful differences in how they handle, how they ride, or how loud they are inside. One obvious difference: The Jeep's leather-wrapped steering wheel is much nicer to hold than Ford's cheap-feeling rubber wheel.

Of course, the Jeep is still held back by its underwhelming engine when it comes

time to get up to freeway speed and past slow-moving vehicles. Even closer to sea level, making a pass requires dropping the hammer, the transmission downshifting four or five gears, the engine racing at 4,000 rpm and generating more noise than acceleration. It's hard to believe this engine is built by the Hellcat company, but at least Jeep finally got this transmission behaving properly, and per the EPA, the Compass gets better fuel economy. But you'll still stop more often to fill that little tank, especially if you're passing a lot of people.

Passengers given the option will choose the Ford if they can ride up front. There's just nowhere to put your stuff in the Jeep except the door bins or the cupholders (one of which is under the extendable armrest and awkward to reach). Forget about phones, keys, masks, lipbalm, or anything else. The Ford has a pair of bins right in the center of the dash in addition to the cupholders and door bins, not to mention pockets incorporated into the sides and backs of the front seats. A coming interior update later this year will significantly improve the Jeep's competitiveness.



Found a cupholder. Another one is under the armrest on the right side of the photo.



Passengers who must ride in back will prefer the extra 1.4 inches of legroom in the Jeep. The Ford's back seat is at the lower limit of spacious for adults, while the Jeep's is just a little larger. Other than that and a lot more headroom in the much taller Ford, the passenger space measurements are, like the exterior, nearly the same. If you're bringing a lot of gear, though, it's worth noting the Ford has 2.2 extra cubic feet of free space behind the back seats, but the two SUVs are again basically the same if you drop those seats.

At the Test Track

Lest you think we're exaggerating about the Jeep's slowness, take a gander at the spec chart. It needs 3.9 seconds longer than the Ford to get up to 60 mph, taking more than 10 seconds to get there. Otherwise, the two are again similarly matched. If you thought the Jeep's all-season tires would give it an advantage in dry-pavement cornering grip and stopping, you'll be disappointed, because it actually performed slightly worse in both. And that's despite the Ford's stability-control program being much more aggressive than Jeep's, seriously slowing the Bronco Sport in the corners.

That said, "The whole experience in the Compass was much more cohesive and sportier than in the Bronco Sport, despite lapping slower," road test editor Chris Walton wrote of the Jeep after the test.

Ford or Jeep?

"The Jeep lacked the gumption needed to conquest a frankly junior varsity trail," Lieberman said. "Yes, it made it up and then down. But as my high school football coach told the team when we technically went undefeated at 9-0-1, 'You did it. You did it ugly, but you did it.' Again, the Bronco Sport Badlands did it much prettier, and for \$2,430 less. A big loss for the Trailhawk. A back-to-the-drawing-board type of defeat."

Maybe if we drove different trim levels and not the hardcore off-road models, we could find reasons to recommend the Jeep, but the lesser Bronco Sports are still faster and achieve better city and combined fuel economy than any Compass. If you're paying top dollar for an off-road model, how well it performs off-road matters, a lot. The Ford Bronco Sport Badlands plainly schooled the Jeep Compass Trailhawk on the trail, no two ways about it. If you absolutely have to have a Jeep in this price range, demand a deep discount on a Cherokee Trailhawk or consider a Wrangler with zero options. Otherwise, buy the Ford. ■

| COMPARISON | 2021 Ford Bronco Sport Badlands | 2021 Jeep Compass 4x4 Trailhawk |
|----------------------------|---|--|
| DRIVETRAIN LAYOUT | Front-engine, AWD | Front-engine, AWD |
| ENGINE TYPE | Turbocharged I-4, alum block/head | Turbocharged I-4, alum block/head |
| VALVETRAIN | DOHC, 4 valves/cyl | SOHC, 4 valves/cyl |
| DISPLACEMENT | 122.0 cu in/1,999cc | 144.0 cu in/2,360cc |
| COMPRESSION RATIO | 10.0:1 | 10.0:1 |
| POWER (SAE NET) | 250 hp @ 5,500 rpm* | 180 hp @ 6,400 rpm |
| TORQUE (SAE NET) | 277 lb-ft @ 3,000 rpm* | 175 lb-ft @ 3,900 rpm |
| REDLINE | 6,500 rpm | 6,200 rpm |
| WEIGHT TO POWER | 15.0 lb/hp | 21.1 lb/hp |
| TRANSMISSION | 8-speed automatic | 9-speed automatic |
| AXLE/FINAL DRIVE RATIO | 3.81:1/2.36:1 | 3.73:1/1.79:1 |
| SUSPENSION, FRONT; REAR | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar | Struts, coil springs, anti-roll bar; struts, coil springs, anti-roll bar |
| STEERING RATIO | 16.2:1 | 15.7:1 |
| TURNS LOCK TO LOCK | 2.8 | 2.7 |
| BRAKES, F; R | 12.1-in vented disc; 11.9-in disc, ABS | 12.0-in vented disc; 11.0-in disc, ABS |
| WHEELS | 7.0 x 17-in cast aluminum | 6.5 x 17-in cast aluminum |
| TIRES | 235/65R17 104H Falken Wildpeak A/T AT3W (M+S) | 215/65R17 99S Falken Wildpeak A/T HT01AZ (M+S) |
| DIMENSIONS | | |
| WHEELBASE | 105.1 in | 103.8 in |
| TRACK, F/R | 63.4/62.8 in | 60.7/60.3 in |
| LENGTH X WIDTH X HEIGHT | 172.7 x 74.3 x 71.4 in | 173.0 x 73.8 x 64.6 in |
| GROUND CLEARANCE | 8.8 in | 8.5 in |
| APPROACH/DEPART ANGLE | 30.4/33.1 deg | 30.3/33.6 deg |
| TURNING CIRCLE | 37.4 ft | 35.3 ft |
| CURB WEIGHT | 3,677 lb | 3,803 lb |
| WEIGHT DIST, F/R | 58/42% | 58/42% |
| TOWING CAPACITY | 2,200 lb | 2,000 lb |
| SEATING CAPACITY | 5 | 5 |
| HEADROOM, F/R | 41.5/41.7 in | 38.6/38.5 in |
| LEGROOM, F/R | 42.4/36.9 in | 41.8/38.3 in |
| SHOULDER ROOM, F/R | 57.3/55.6 in | 56.7/55.1 in |
| CARGO VOLUME, BEH F/R | 60.6/29.4 cu ft | 59.8/27.2 cu ft |
| TEST DATA | | |
| ACCELERATION TO MPH | | |
| 0-30 | 2.1 sec | 3.3 sec |
| 0-40 | 3.2 | 5.1 |
| 0-50 | 4.8 | 7.6 |
| 0-60 | 6.5 | 10.4 |
| 0-70 | 8.8 | 14.2 |
| 0-80 | 12.5 | 19.0 |
| 0-90 | 16.4 | — |
| PASSING, 45-65 MPH | 3.5 | 5.8 |
| QUARTER MILE | 15.3 sec @ 87.8 mph | 17.7 sec @ 77.5 mph |
| BRAKING, 60-0 MPH | 123 ft | 129 ft |
| LATERAL ACCELERATION | 0.76 g (avg) | 0.75 g (avg) |
| MT FIGURE EIGHT | 28.4 sec @ 0.59 g (avg) | 29.2 sec @ 0.54 g (avg) |
| TOP-GEAR REVS @ 60 MPH | 1,600 rpm | 1,500 rpm |
| CONSUMER INFO | | |
| BASE PRICE | \$34,315 | \$32,310 |
| PRICE AS TESTED | \$35,905 | \$38,335 |
| STABILITY/TRACTION CONTROL | Yes/Yes | Yes/Yes |
| AIRBAGS | 9: Dual front, f/r side, f/r curtain, driver knee | 7: Dual front, front side, f/r curtain, driver knee |
| BASIC WARRANTY | 3 years/36,000 miles | 3 years/36,000 miles |
| POWERTRAIN WARRANTY | 5 years/60,000 miles | 5 years/60,000 miles |
| ROADSIDE ASSISTANCE | 5 years/60,000 miles | 5 years/60,000 miles |
| FUEL CAPACITY | 16.0 gal | 13.5 gal |
| EPA CITY/HWY/COMB ECON | 21/26/23 mpg | 22/30/25 mpg |
| ENERGY CONS, CITY/HWY | 160/130 kWh/100 miles | 153/112 kWh/100 miles |
| CO2 EMISSIONS, COMB | 0.84 lb/mile | 0.78 lb/mile |
| RECOMMENDED FUEL | Unleaded regular | Unleaded regular |

*Horsepower and torque values using 93-octane fuel

ALL EIGHT UP

LEXUS STUFFS A V-8 INTO THE IS SEDAN, BUT IT'S NOT THE IS F AS WE KNOW IT

WORDS ALEXANDER STOKLOSA



Here we were worried about the future of performance at Lexus. The midsize GS sport sedan and its spicy GS F halo flatlined last year, and Lexus seems to have busied itself diluting the F hot-rod division's name with flash-over-dash F Sport styling packages available even on its hybrids, crossovers, and hybrid crossovers.

Only a single full-blown F model—the RC F coupe—is left, and an entire generation has grown up unaware that the shrieking V-10-powered LF-A sports car existed.

No wonder the recently updated IS sedan, in particular the IS 350 F Sport model, feels like it's the chest compressions keeping Lexus performance alive. The IS 350's sporty ride and handling balance is satisfying and fun, though its 311-hp V-6 engine could use a jolt.

But stand back, everyone, because a defibrillator has arrived: the IS 500. This IS' high-revving 5.0-liter naturally aspirated V-8 engine is as electrifying as heart-starting paddles applied without cold, resistance-lowering medical jelly. People, we've found a pulse.

For lack of a more complex back story, the IS 500 is an IS 350 F Sport with every available performance enhancement, plus a very important engine swap. There is a 5.0-liter V-8 where the IS 350's 3.5-liter V-6 usually sits. Just like that, the IS 500 stacks an extra 161 hp and 115 lb-ft of torque atop the IS 350's output, totaling 472 hp and 395 lb-ft.

The IS needed some minor work to fit the larger engine in its compact snout,



mostly pushing the radiator forward, lengthening the front fenders to make a little room and meet the bumper, and fitting a new hood with a 2.0-inch power dome to clear the V-8's noggin.

Other than a new set of lightweight Enkei 19-inch wheels (1 pound lighter in front, 2 pounds in back), two extra strakes molded into the rear bumper's diffuser, dark chrome window trim, and quad exhaust outlets (two per side, stacked like on past F models), the IS 500 looks exactly like an IS 350 F Sport. There are fewer "F"





badges on the IS 500 than on the IS 350, with only the Lexus “L” logo and small “IS 500” lettering on the trunklid.

It’s deliciously subtle, but if you’re thinking the IS 500 might seem more shocking if it didn’t look like just any other IS ... sure. You’re probably also furiously Googling the Wikipedia page for the Lexus IS F, the last IS with a V-8—this same engine, in fact, covered by a hood with a very similar bulge—and wondering why the IS 500 isn’t being called an IS F.

Except the IS 500 is not an IS F. That muscled-up IS was sold between 2008 and 2012 and was defined by its 416-hp version of this V-8 and a track-ready chassis. An entire IS generation has

come and gone since without a new F, and Lexus isn’t saying whether one will join today’s IS family. So IS 500 it is, and beyond its engine, it lacks any meaningful upgrades over an IS 350.

Lexus is adamant the IS 500 be recognized as an “F Sport Performance” variant, a new performance tier Lexus created between the mild F Sport treatment and the F (you know, if Lexus still offered an IS F).

It’s easier to see how the IS 500 fits neatly into this new between-two-F’s F Sport Performance program with its mix of F Sport and whole-milk F components borrowed from the IS 350 sedan and RC F coupe. Take the engine: It’s the same unit, making the same power, used in today’s RC F coupe. Yet it spins the IS 500’s rear tires via the IS 350’s eight-speed automatic and the limited-slip rear differential from that model’s Dynamic Handling package. You can’t get the RC F’s available torque-vectoring rear diff.

The rest of the IS 350 F Sport’s Dynamic Handling components are standard, including its Sport+ and Custom drive modes (on top of Normal, Sport S, and Eco), adaptive dampers, stiffer springs, staggered-width 19-inch summer tires, and a trunklid spoiler. A new-for-2022 Yamaha rear chassis damper quells body vibrations and deflections (other Lexus models have used these long horizontal dampers), and the brake rotors are upsized to 14.0 inches in front and 12.7 inches in back.

None of this really screams “IS F!” Instead, it’s a page taken from the BMW and Audi playbooks, which have long offered such midgrade performance models. M Performance models like the M340i, which live between the regular 3 Series and the M3, or Audi’s S line nestled under the wilder RS level. A little more power, a little more handling, commute-friendly ride quality, and low-key visuals.

Where the Lexus leaps out is in its choice of power. Not only is there quite a lot of it relative to the BMW

2022 Lexus IS 500 F Sport

| | |
|---------------|---|
| BASE PRICE | \$56,000 (est) |
| LAYOUT | Front-engine, RWD, 5-pass, 4-door sedan |
| ENGINE | 5.0L/472-hp/395-lb-ft DOHC 32-valve V-8 |
| TRANSMISSION | 8-speed automatic |
| CURB WEIGHT | 3,900 lb (mfr) |
| WHEELBASE | 110.2 in |
| L X W X H | 185.4 x 72.4 x 56.5 in (est) |
| 0-60 MPH | 4.5 sec (mfr est) |
| EPA FUEL ECON | Not yet rated |
| ON SALE | Fall 2021 |

M340i (382 hp), Audi S4 (349 hp), and Mercedes-AMG C 43 (385 hp), but the IS 500 also boasts the only V-8 in the group. Even one level up, where the full-on M and AMG models prowl, V-8s aren’t the norm—and although the C 63 has one for now, it breathes through two turbos.

The Lexus, instead, relies on good old-fashioned engine speed and displacement to generate big power—and enough of it to actually compete on paper with the 472-hp Cadillac CT4-V Blackwing, 473-hp BMW M3, and 469-hp Mercedes-AMG C 63. This V-8 loves to rev, and peak horsepower hits at a stratospheric 7,100 rpm. Like the RC F and previous F models that used this same 5.0-liter engine, the IS 500 employs a tube connecting the intake and the firewall to literally pipe in the V-8’s glorious snort.

The tube is a decent metaphor for the IS 500 overall. It allows the driver to mainline the V-8’s awesomeness aurally and motivationally while practically no one else will be the wiser.

Details such as pricing, complete fuel economy estimates, and how much the V-8 shifts the IS’ weight balance forward must wait until closer to the on-sale date later this year.

Lexus tells us the engine and other changes add 148 pounds to the IS 350’s curb weight, bringing its claimed figure to just shy of 3,900 pounds—50 pounds lighter than the RC F coupe with the same V-8. Lexus estimates the IS 500 can reach 60 mph in 4.5 seconds; the barely heavier RC F does the same in 4.3 seconds and reaches a 168-mph top speed. It wouldn’t be a stretch to expect similar real-world numbers from the IS 500, a pulse-quickenning thought indeed. ■



TO WATCH
VIDEO OF
THE IS 500,
point your
smartphone
camera here.





Every so often, Toyota, purveyor of sensible, family-friendly SUVs, minivans, and sedans, builds a car that absolutely blows you away: the 2000GT that made its debut in 1965 and was intended to take on the Jaguar E-Type; the rally-inspired Celica GT-Four of the early '90s; the flawed but fabulous Lexus LFA with its screaming naturally aspirated V-10.

The 2020 Toyota GR Yaris is without a doubt a member of this select group. In fact, it might be the best of the lot. You see, this little hot hatch, specifically designed and engineered to allow the Yaris to compete in the World Rally Championship, is perhaps the most focused driver's car you can buy right now this side of a Porsche 911 GT3 RS.

The GR Yaris proves Toyota can build performance cars as engaging as the best of them. The retail-sale GR Yaris, virtually hand-assembled by top technicians at the Toyota Gazoo Racing facility inside the Motomachi plant in Toyota City, Japan, exists because it allows the Yaris WRC car to be competitive. "The GR Yaris Circuit Pack is as close to the Yaris WRC as you can get without joining the rally team," Toyota WRC driver Jari-Matti Latvala says. And he's right.

First things first: The GR Yaris has nothing in common with the subcompact hatchback Toyota sold in the U.S. until recently as a Yaris. That car is a rebadged Mazda 2. Nor, in truth, does it have much

in common with the Toyota-designed and -developed XP210 Yaris launched in Japan, Europe, and Australasia in 2020. In fact, the only parts the GR Yaris shares with the XP210 are its front and rear lights, exterior rearview mirrors, and antenna.

The front suspension is MacPherson strut with strengthened components, and a bespoke multilink setup is at the rear. There are massive disc brakes at each corner; the 14.0-inch front rotors are larger than those on the GR Supra, and the rear rotors are 11.7-inch items. Its wheels are 18-inchers shod with 225/40 tires.

The front and rear axles connect via the first new Toyota-developed all-wheel-drive system in 20 years. Simple and light, it features a fast-response center coupling with three modes: Normal, which sends 60 percent of the torque to the front wheels; Sport, which sends 70 percent to the rear wheels; and Track, which splits the torque 50/50. A hypoid-gear transfer case links a conventional six-speed manual transmission to the all-wheel-drive system.

STREET-LEGAL RALLY

THE NEXT BEST THING TO DRIVING A WORLD RALLY CAR, SADLY NOT SOLD IN AMERICA

WORDS ANGUS MACKENZIE



Motive power comes courtesy of a 1.6-liter turbocharged three-cylinder engine that makes 268 hp and 273 lb-ft of torque. Competition-spec features include oil jets to cool the pistons, large exhaust valves, and a turbocharger whose turbine spins on ball bearings. Toyota says it is the most powerful three-cylinder production engine in the world.

To the bodywork: About 10 percent of the body structure is aluminum, which helps make it 84 pounds lighter than that of the regular, dowdy five-door hatchback. (The GR Yaris is also a three-door to comply with WRC regs.) It has 6 percent more welds and 70 percent more structural adhesive to increase rigidity. The hood, liftgate, and doors are aluminum, and the roof is made from forged carbon fiber. In the lightest of its three trim levels, the GR Yaris weighs about 2,850 pounds.

All-wheel drive and a weight-to-power ratio that's not far off that of a Porsche Boxster means good performance. Toyota claims a 0-62-mph time for the GR Yaris of 5.5 seconds. It feels quicker.

That's partly a function of size. You simply don't expect a car that can barely fit you and your groceries to deliver the neck-snapping launch and determined acceleration of the GR Yaris. That little engine is relentless, especially above 4,000 rpm and all the way to the 7,000-rpm redline. The six-speed manual shifts with a chunky accuracy. A proper rally-style dual-clutch transmission would make the GR Yaris even quicker, but the six-speed's well-spaced ratios, the engine's lack of turbo lag, and the meaty midrange torque mean it's never caught short when you're attacking the twisties.

The GR Yaris feels like a car developed by race engineers. The brakes are superb, the steering—once you switch off the lane keeping nanny—is accurate and well weighted, with a steering wheel that's just the right diameter and has a rim section that's not too thick and chunky. You sit strangely high in the car, but the sport seats are supremely comfortable and supportive, and the pedal heights and weights are just right.

Our test car was the range-topping GR Yaris Circuit Pack, with forged aluminum wheels (saving 22 pounds versus a set of standard alloys) and Michelin Pilot Sport 4S tires instead of the Dunlop SP Sport Maxx 050s fitted to the base and Convenience Pack models, along with track-tuned suspension and Torsen limited-slip differentials front and rear.

It rides firmly, the body motions taut and tidy, but the suspension soaks up sharp bumps with surprising fluency, the stiffer body shell eliminating impact



The GR Yaris rolls on a unique platform that combines a chunk of the GA-B platform from the XP210 Yaris with a rear section adapted from the GA-C platform, which underpins the Corolla and C-HR.

resonances. The short wheelbase and wide track mean the car feels busy on a rough road, but it has none of the dreadful pogoing motions that blighted the 2017 Ford Focus RS.

But what's most impressive is how smoothly the GR Yaris gets into corners—there's none of the pointy, edgy lift-off oversteer some hot hatches demand—and how concisely it tracks through them. You can go to power much earlier than in any of its front- or even all-wheel-drive rivals and let the differentials do their thing. Just steer where you want to go, and the GR Yaris will go there. There isn't a hot hatch on the planet that gets out of corners as quickly and as confidently as this Toyota.

You'll climb out of the GR Yaris after a blast down your favorite driving road and grin with delight at just how communicative, balanced, and accomplished this little car feels. You'll stare at the badge and shake your head: This is a Toyota? Then you'll remember the top-spec Circuit Pack model costs less than two-thirds the price of a Ford Mustang Shelby GT500 and 40 percent of the price of a Porsche Cayman GT4, two of the best driver's cars you can buy for \$100,000 or less. And you'll burst out laughing. ■

2020 Toyota GR Yaris

| | |
|------------------------------|---|
| PRICE | \$39,000-\$44,000 (est) |
| LAYOUT | Front engine, AWD, 4-pass, 2-door hatchback |
| ENGINE | 1.6L/268-hp/273-lb-ft turbo DOHC 12-valve I-3 |
| TRANSMISSION | 6-speed manual |
| CURB WEIGHT | 2,850-2,900 lb (mfr) |
| WHEELBASE | 100.8 in |
| L X W X H | 157.3 x 71.1 x 57.3 in |
| 0-62 MPH | 5.5 sec (mfr est) |
| EPA FUEL ECON, CITY/HWY/COMB | Not rated |
| ON SALE | Now (global markets only) |



With massive brakes, supportive sport seats, and a host of other details, you can tell race engineers had a hand in developing the Toyota GR Yaris.





THE GREAT STICK SHIFT CONUNDRUM

YOU CAN NOW DRIVE A 992 911
WITH A MANUAL GEARBOX.
BUT SHOULD YOU?

WORDS MAC MORRISON
PHOTOGRAPHY BRANDON LIM



feel guilty, and a little bit confused. Some of what I'm about to say will go down like a tungsten catamaran. But hear me out.

I've just driven a 2020 Porsche 911 Carrera S—now fitted with a seven-speed manual gearbox as a no-cost option—and you can probably predict the gist to be: “The manual transmission is for real drivers. It's more fun, more engaging, requires more skill, and, really, only wankers drive performance cars with a dual-clutch or some other such automated gearbox doing the work for them. The end.”

This refrain was a lot more reality-based a decade-plus ago, when a sports car equipped with an automatic transmission usually meant a neutered experience with a traditional, torque-converter 'box. Those transmissions might or might not have decided to select the right gear for a given situation, and did it slowly. Enthusiasts' derision of them made easy sense.

Today, though, modern paddle-shift gearbox performance eclipses what was not long ago state of the art in world-class race cars. Even the Porsche folks who design and engineer these cars privately roll their eyes at this whole stick shift thing. And it's not limited to the people who work on the Cayenne and Macan and Panamera and Taycan, lest you think Porsche is no longer entirely an enthusiast-driven enterprise.

This might come as a depressing shock, but if you have a casual dinner with the GT team members responsible for the hardcore GT2, GT3, and GT4 models and you wait until they've finished a glass or two of wine, you barely have to blurt out something like, “So, about those manual transmissions ...” before you get a response like, “If it wasn't for America, we'd have been finished with that nonsense years ago.”

The Porsche team well realizes the same market that led a mass exodus from manual cars is now the loudest complainer when Porsche tries to sneak out of the stick shift game. Remember



when a few years ago the Flacht crew tried to retire the manual from the GT3? The irony is not lost on it.

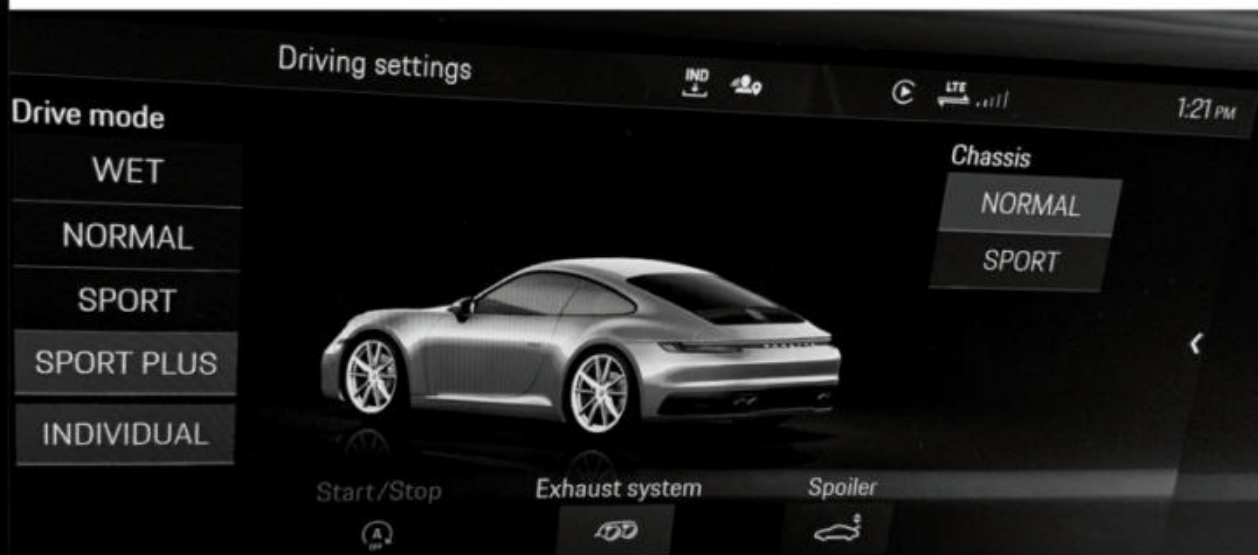
Of course, American fans of Porsche sports cars are a different, small group. We want to shift gears ourselves—I own a 2006 Cayman S six-speed manual, so “we” is appropriate here—but we're irrelevant to the overall car market's behavior. And depending upon the 911 model in question, 40 percent of buyers opt for the manual, so Stuttgart listens.

My pangs of guilt and confusion on this topic stem from decades spent mostly romanticizing the stick shift and the clutch pedal, and perfecting their interplay. Long before I could actually drive, I would put my left hand on top of my mother's right hand as she changed gears in our poor little 1985 Ford Escort. As soon as I got my own driver's license in the '90s, I set out to master this art. And when you add heel-and-toe downshifts into the equation, I do still think of it as an art.

This all matters in terms of the manual-gearbox 2020 Porsche 911 Carrera S, for two reasons: I'm an established stick shift aficionado and a Porsche owner. And after driving the new car, as amazing and as satisfying as it is, I cannot legitimately say it's more fun, more engaging, or better than the eight-speed PDK twin-clutch version Porsche pushed into the market first. This is the point where self-described “enthusiasts” will start fast-pitching Molotov cocktails at the nearest target and setting this magazine aflame.

Don't light your wicks just yet. In terms of a conventional, non-philosophical

Like all 911s, Porsche gives you various ways to enjoy the car, but we'd appreciate a little more flexibility of choices for the manual.



FIRST TEST

analysis, the 992 Carrera S' do-it-yourself seven-speed transmission is marvelous. It includes notably short throws from the physically stubby shift lever (due to the height of the center console upon which the stick is mounted) and a stiff, excellently positive GT3-like engagement through the gates. In fact, it's easily the best standard-model 911 shift-linkage action of all time.

The only tactile knock on it: The shift knob features a plastic, diamond-pattern ring circling its top, which rubs against your palm and becomes annoying after a spell of hard driving (or maybe my delicate, uncalled hands are the problem here). This design element looks cool, but it's an ill-conceived choice in terms of user comfort, made in the name of aesthetics.

Likewise, Porsche has mastered the art of driver input tactility. The clutch pedal somehow works simultaneously like a light switch in its actuation yet is notably progressive beneath your left foot as you target the bite point. The latter is a bit high in the pedal's travel, which gives you the progressiveness, but its response is a perfect balance of stiff and beefy while being absolutely not tiring, and it's easily predictable.

It's so predictable, in fact, Porsche's flagship sports car and its manual transmission feel like they feature a pseudo anti-stall mode: For example, hesitate to engage the clutch fully as you attempt to creep up an inclined driveway at 1 mph, and the engine might *thunk* into what feels like a full-on stall. But you need only stab the clutch pedal again to refire the flat-six, and you don't need some pro race-driver level of sensitivity to accomplish this feat. It demonstrates Porsche's mastery of control inputs and its forethought of such matters, which mesh together unlike any other car on the market today, regardless of price or vehicle segment.

There are two other real-world-user practicalities to note about this transmission. The first is nothing but welcome, while the second comes with an annoyance and with questions, both physically and philosophically.

Having a seventh ratio available in a manual transmission is great—as long as there's a mechanism in place to avoid grabbing seventh gear instead of fifth when you bang the shifter up and to the right, especially when attempting quick shifts. The 911 Carrera S indeed provides a lockout feature, making it impossible to screw up your Texas-mile runs or your balls-out Nürburgring laps.

This is not a speed- or rpm-dependent function; it's simply a mechanical lockout. You can lug the engine in seventh at 35 mph, but you have to shift to fifth or sixth gear first, before the lock releases and makes the seventh gate available. It all might sound like an engineering trait deserving of nothing more than a “duh” in response to the way it works, but it's something others have overlooked with similar manual transmissions, to the detriment of driver confidence and consistency, and certainly to lap times.

When it comes to the previously mentioned “art of shifting,” though, the transmission's automatic rev-match program for downshifts is a sight more confounding. Considering the 911 Carrera S carries its share of ubiquitous modern-car driving modes and settings, the lack of a simple rev-match on/off button seems like an oversight as silly as a manufacturer neglecting to include a seventh-gear lockout.

To most people and to most Porsche customers, this will not be a big issue, and certainly not a deal breaker. But if “driver engagement” and “purity” are what you get for ticking the manual transmission box on the order form ... well, shouldn't those who know how to match revs themselves be afforded the opportunity?



This is where I ran into a philosophical and emotional cliff face with this car. Just as the settings for the active suspension, stability/traction control, and exhaust are available to tune individually regardless of overall drive mode, you can only avoid the rev-match function if you are in Normal mode or in the most extreme mode possible.

This setup is completely backward. If you want to impress your passengers with your downshifting magic, you can't do so while taking advantage of the quicker throttle response you get in Sport and Sport Plus. It's rather odd because, when blipping their own throttle pedal to match revs, most experienced drivers would welcome a more aggressive

THE WORLD WOULDN'T FEEL RIGHT WITHOUT STICK SHIFT PORSCHEs.



There might not be a better weekend driving experience than a new Carrera S, a stick shift, and a clear mountain road.



The shifter's action is one of the best on the market, and the pedals are well positioned for whenever you do choose to match revs for yourself.

2020 Porsche 911 Carrera S

| | |
|-----------------------------|---|
| BASE PRICE | \$114,650 |
| PRICE AS TESTED | \$137,270 |
| VEHICLE LAYOUT | Rear-engine, RWD, 4-pass, 2-door coupe |
| ENGINE | 3.0L/443-hp/390-lb-ft twin-turbo DOHC 24-valve flat-6 |
| TRANSMISSION | 7-speed manual |
| CURB WEIGHT (F/R DIST) | 3,326 lb (37/63%) |
| WHEELBASE | 96.5 in |
| L X W X H | 178.4 x 72.9 x 50.8 in |
| 0-60 MPH | 4.0 sec |
| QUARTER MILE | 12.2 sec @ 119.9 mph |
| BRAKING, 60-0 MPH | 94 ft |
| LATERAL ACCELERATION | 1.08 g (avg) |
| MT FIGURE EIGHT | 23.3 sec @ 0.86 g (avg) |
| EPA CITY/HWY/COMB FUEL ECON | 17/25/20 mpg |
| ENERGY CONS, CITY/HWY | 198/135 kWh/100 miles |
| CO2 EMISSIONS, COMB | 0.98 lb/mile |

response from the gas pedal in order to complete the blip quicker.

Instead, the only way to defeat the rev-match program in Sport and Sport Plus is to fully disable the PSM stability management system. This effectively means the car functions at two extremes: Either you perform all of the gear-change art yourself—and give up the PSM safety net you have access to in every other mode—or you always have some level of automated shifting intervention in all but the most mundane Normal setting.

Whether this odd PSM-off-for-rev-match-deactivation is a conscious decision by the 992 development team or, more likely, an old, unclosed loophole of Porsche's sports car CAN bus, it doesn't matter to the end user. The fact the previous-gen 911 GT3 does feature a physical rev-match on/off button makes this situation all the more confounding.

It's difficult to shake the oddness of it all, and it comes off as disingenuous if the argument for a modern manual 911 is all about *do-it-yourself engagement*. Most any stick shift loyalist will agree the art lies in the downshift; I have a difficult time understanding the supposed massive difference between pulling paddles to shift up and down versus moving a stick up and down (and, OK, left and right) while all you have to do is press

and depress the clutch pedal with little mechanical sympathy or coordination.

Meanwhile, the PDK-equipped 911 is marginally quicker than its manual sibling, allows you to always keep both hands on the steering wheel, allows you to left-foot brake just like almost all real racers do anymore, and allows you to focus 100 percent on hitting your braking, corner-entry, and apex marks.

Cue my internal conflict and confusion when I'm trying to decide, in the context of the modern era, which model is more of a "real driver's car."

So light those Molotovs and hurl them my way. But before you do, know this: I still love shifting gears, and I had nothing but a blast while clutching and declutching and working my right hand every minute I drove the manual Carrera S. I haven't lost my mind or my sense of history about what this all meant for so long. The world wouldn't feel right without any stick shift Porsches, and we'd all miss the feeling of moving the lever in our hands, the satisfaction of a perfect manual downshift.

But let's be real: The next time you see someone driving a paddle-shift performance car, don't think your manual-banging self is automatically more of a true enthusiast. At this point, the other driver could make a few compelling arguments of their own as to why the opposite might be true. It also explains why, in Germany, more than a few perhaps too empirical Porsche decision-makers would like a word with you. Not that I'm suggesting for a moment any of us give up the fight—but we should acknowledge what we're fighting for: true total control. Otherwise, we've already lost. ■

ANIMAL CONSERVATION

HOW RANDY POBST SAVED A PORSCHE GT2 RS FROM THE CRUSHER

One of the crazier, hard-to-swallow truths of the automotive industry: A whole lot of cars are fed to *the Crusher*. What's the Crusher, you ask? It's a dramatized catch-all phrase to gin up emotions when cars are seemingly destroyed needlessly. The cops pop you and your buddies for what they allege is street racing? Off to the Crusher your whips go. Dodge decides to destroy a whole bunch of what most people would call perfectly good Vipers? Off to the Crusher! The federal government attempts to pull the nation out of the 2008 recession by jump-starting the auto industry and filling roads with newer,

more fuel-efficient vehicles via its Cash for Clunkers program? The Crusher it is.

But seriously, why crush cars? Well, in the case of those Vipers, they were pre-production models that can never be sold. If they ever somehow "get loose" and are involved in a road crash, the manufacturer is hosed—just ask your nearest lawyer, *any* lawyer. Fact is, it makes great economic sense for automakers to destroy these cars. They would hurt



The more things change, the more the GT2 RS still holds the production car lap record around Big Willow, all these years later.



Randy Pobst
signed the hood
of this record-
setting GT2 RS.
His inscription:
My FAVORITE 911
Willow Springs
1:21.08
Randy Pobst



WANT TO SEE RANDY'S
RECORD-SETTING LAP?
Point your smartphone camera here!



themselves, shareholders, and future crash victims if they didn't make sure certain vehicles were good and dead.

But what about special cars? Or even *really* special cars? Like, say, the 2018 Porsche 991-series 911 GT2 RS Weissach Edition that set the production car lap record in mid-2018 on the big track at Willow Springs International Raceway? The very car driven by our own Randy Pobst and that we featured in a Jethro Bovingdon-hosted episode of *Ignition*? Well, that British Racing Green beauty is a pre-production car, meaning it can never be registered, never be sold, and with 691 horsepower on tap, is one hell of a fast-moving liability. So to the Crusher it was headed. That is, until Andy Preuninger, the affable, heavy metal-listening boss of Porsche's GT division and the man behind masterpieces like the GT2 RS, got involved.

The story relayed to me goes like this: Preuninger hears about what is going on, calls up Porsche Cars North America public relations, and says something to the effect of, "They're going to crush my baby!"

Now, the actual story may be that one of Preuninger's employees was trying to figure out a way to save some cars and, as this GT2 RS was one of the North American PR fleet's cars, inquired as to what's so special about it. Either way, after some "This aggression will not stand!" dialogue, someone pointed out that not only did Pobst set a record lap in the car (a screaming 1:21.08), but he also signed the underside of the carbon-fiber hood sometime later at a Rare Shades event in Atlanta, where he lives and where Porsche North America is headquartered. (Rare Shades is a cars and coffee-style get-together that features Porsches with paint-to-sample hues, or ones that are at least coated with rare colors.)

Good thing Porsche had him sign it; as it turns out, this was what saved this 911 GT2 RS by getting it placed in the Porsche Museum in Stuttgart, Germany. After all, setting a lap record is a pretty good reason to get a car into a museum, but having the driver's signature under its hood? Roll out the red carpet.

And that is exactly what happened. Now, the modern-day Widowmaker is free to live out its days in the peace and history-soaked serenity of Porsche's fantastic Zuffenhausen spread, thanks to lighting up a track not too far from Los Angeles. And hey, I'm 60–75 percent sure I sent the email that got this GT2 RS out to Willow Springs in the first place, so I'll take a little bit of credit. The most important, satisfying thing is, for once we saved an awesome car from the Crusher. ■

The Driver's Rolls

The British are famous for understatement, so much so you'd believe it if someone told you it was codified in common law. Rolls-Royce, the most British of automakers, treats understatement with the same reverence it treats the Spirit of Ecstasy that adorns its cars: the utmost. Six years ago, Rolls launched the Ghost Series II, insisting it was a "subtle" update. Now it presents a third-generation Ghost (no "series" appellation) described by a design movement Rolls-Royce itself fabricated: "post opulence."

Design

Much as no Rolls-Royce is ever subtle, neither is it ever unopulent. But the new 2021 Ghost is better called "post ostentatious." Opulence is most commonly associated with frivolity and excess. Ostentatiousness, that's what Rolls wants to get past—and where it succeeds (measured, of course, in the context of \$332,500 personal vehicles). This Ghost is no less opulent by the word's strictest definition; it's simply more serious. It's more dignified in design, in accommodation, and in driving, but no less lavish and excessive.



The old Ghost's greatest sin was its design softness, its lack of presence in the shadow of the audacious but resolute Phantom. Goodwood's designers must agree, because small changes, like moving the front axle forward, sharpening the creases, and flattening surfaces, make this Ghost far more assertive, more imposing. More like the Phantom.

Better Dynamics

This self-confidence imposes on the driving experience, too. The old car was the handler of Rolls' sedan lineup, an admittedly easy bar to clear at the time when the old Phantom was designed to dispatch a corner at nothing less than a highly dignified pace. With the previous model, though, some of Rolls' trademark isolation was lost, as unrefined pavement sent unbecoming shimmies through the highly modified BMW 7 Series chassis. No more. The new Phantom greatly expanded its driving repertoire while maintaining its "magic carpet" ride, thus raising the fence for the new Ghost, as well.

Both are now built on the exclusive "Architecture of Luxury," which Rolls adamantly insists is not related in any way to BMW's 7 Series. This reaps reciprocal benefits, with the Phantom gaining some of the Ghost's dynamic capabilities, and the Ghost gaining the Phantom's



refinements. The new version both rides and handles better than ever before.

Although the Ghost has indeed always handled quite well *for a 5,500-pound sedan*, the caveat is no longer necessary. It used to be enough that the Ghost handled surprisingly flat around a corner and turned in remarkably well. Thanks to sophisticated all-wheel drive and rear-wheel steering, the car feels less like an obedient servant and more like a willing partner. It enjoys a spirited drive rather than simply enabling one, and there's a mature playfulness to it, a willingness to loosen its collar a bit. Customers living within reach of genuinely fabulous driving roads will immediately appreciate the difference. After all, Ghost owners are the type to drive themselves rather than be chauffeured like Phantom owners.

Doing so, they'll find the Ghost moves much like the new Phantom, just smaller. Acceleration is by way of an ethereal force drawing the car forward, something no other powertrain of any kind, combustion

"POST OPULENCE?" TRY POST OSTENTATION. THE GHOST IS NO LESS RICH—IT JUST EXPRESSES ITSELF DIFFERENTLY.



The picnic tables, long a Rolls-Royce calling card, are motorized so you don't have to expend more effort than a push of a button.



or electric, can reproduce. There's no gauche squatting or nose lifting; it just goes. Unless you're really being naughty, the cheeky "Power Reserve" meter never dips below 70 percent, just to remind you how over-specced it is. Braking is like driving into sand, then simply settling down onto the earth; it's incredibly easy to over-brake and stop far shorter than intended. Everything outperforms.

At the same time, there's less compromise in ride quality. Rather than causing body shimmies, road blemishes now feel like the gaps in the tracks as your high-speed train glides across the countryside. Speed bumps are optional, and potholes are only to be avoided lest they pop a tire. What you feel inside the cabin seems to exist only to remind you you're driving a car and are not isolated completely from the outside world.

The Details Add Up

The lack of complete isolation is by design. In an uncharacteristic moment of boastfulness, Rolls-Royce engineers say they tried building a car that was completely silent inside, and customers found it unnerving. So they allowed a certain amount of white noise back in, and you also hear a bit of engine throat-clearing at times, the soft rustle of air rushing out of the vents, and a distant thrum of rubber on asphalt. What you don't hear is wind noise around the door mirrors that marred the experience in the previous Ghost.

Every choice Rolls-Royce made about the cabin also feels deliberate and unrepentant, whimsy traded for directness. The old Ghost's interior walked a tightrope of old-world design cues and designers' attempts to hide



2021 Rolls-Royce Ghost

| | |
|------------------------------|---|
| BASE PRICE | \$332,500 |
| LAYOUT | Front-engine, AWD, 4-pass, 4-door sedan |
| ENGINE | 6.7L/563-hp/627-lb-ft twin-turbo DOHC 48-valve V-12 |
| TRANSMISSION | 8-speed auto |
| CURB WEIGHT | 5,650 lb (mfr) |
| WHEELBASE | 129.7 in |
| L X W X H | 218.3 x 76.7 x 61.9 in |
| 0-60 MPH | 4.6 sec (MT est) |
| EPA FUEL ECON | 12/19/14 mpg |
| ENERGY CONSUMPTION, CITY/HWY | 281/177 kWh/100 miles |
| CO2 EMISSIONS, COMB | 1.35 lb/mile |
| ON SALE | Now |

actually need to be out of sight. Find ways to enhance the luxury experience without inhibiting functionality or hiding things unconvincingly.

Since its debut, you might have considered the Ghost the Rolls-Royce for people not rich or sophisticated enough to buy the Phantom. In reality, it was always the model for people who appreciated the marque but didn't really get it.

It's wrong to maintain either of those beliefs when it comes to Goodwood's newest creation. It is a "real" Rolls-Royce through and through, and better in every way for it. ■



WORDS SCOTT EVANS
PHOTOGRAPHY WILLIAM WALKER

GOOD VIBRATIONS



Until now, the only things Chevrolet had to fear when it looked at its Colorado versus Ford's Ranger were the Ranger's brand equity and Ford's dominance in pickup fleet sales.

When it came to the *product*, the latest Ranger couldn't touch the Colorado. But the 2021 Ranger Tremor significantly closes the gap with the Colorado ZR2.

The Tremor package makes this Ranger generation the best it's ever been. Its combination of fatter tires, better shocks, and new rear springs goes a long way toward fixing the ride and handling flaws that had overshadowed its strengths.

The standard Ranger feels wildly underdamped as it throws occupants from side to side, even as you do something as benign as entering a driveway at an angle. Even driving straight down the road, the stiff springs that provide top-of-class payload and tow ratings mean you're always jostled around. The Tremor package fixes that.



Fox Shox dampers, with remote reservoirs in the rear, do most of the work, with an assist from the fat, squishy sidewalls of the 32-inch Continental Grabber A/TX all-terrain tires and the new multileaf rear spring configuration. The result is the best-riding and best-handling Ranger you can buy. It's still on the stiff side, but the better body control and consequent reduced impact on passengers is night and day.

It still drives like a truck because Ford refuses to sacrifice any more towing and hauling capability than is absolutely necessary to accommodate the off-road hardware. Softer springs and shocks that increase articulation and impact absorption off-road also reduce payload capacity, which in turn reduces trailer-tongue

weight capacity. Ford won't tolerate its trucks not being class leaders (or close to it) when it comes to doing work, so F-Series Tremor packages to date walked a narrow line between off-road capability and job-site capability.

Witness: The Ranger Tremor's 1,430 pounds of payload capacity is the least of any Ranger and slightly lower than some direct competitors', until you consider those competitors' off-road models. Compare the Ranger Tremor to a Colorado ZR2, and the Ford hauls 340 pounds more in the bed. This makes the Ranger a better overlanding platform, as you have more capacity for people and gear.

The gulf widens in terms of towing. All Rangers, Tremor included, already out-tow the Colorado by 500 pounds, at 7,500 pounds max. Unlike other off-road trucks, though, the Tremor doesn't lose a pound of towing capacity, giving it a 2,500-pound advantage over the Colorado ZR2.



THE RANGER TREMOR PUTS
THE CHEVY COLORADO'S
DOMINANCE ON SHAKY GROUND

TO WATCH VIDEO
OF THE TREMOR
OFF-ROADING, point
your smartphone
camera here.



That’s all good for doing work, but what about when it comes time to play? The Tremor package gives the Ranger 0.8 inch more ground clearance compared to the tamer FX4 off-road package, for a total of 9.7 inches, improving approach, break-over, and departure angles by 2–3 degrees.

Those specs whoop the Colorado ZR2 up and down the trail. On the other hand, the ZR2 comes with front and rear axle lockers—the Tremor only gets a rear locker—and incredible Multimatic DSSV spool-valve shocks, so we won’t make a call on which is better off-road until we conduct a proper comparison.

Regardless, the Ranger Tremor is pretty dang good off-road. The Grabber A/TX is a great all-terrain tire, and it let the truck skip up a muddy, snowy trail with almost zero wheelspin. Even playing in a muddy terrain park was no issue, with the Ranger scrambling up steep slopes with little effort. Ford deserves credit for allowing the rear-axle locker to engage at any time rather than restricting it to four-wheel drive or even four-low-only, like some competitors do (the Jeep Gladiator Rubicon, for instance). The cushier suspension makes bounding up a trail quick and easy, as the big hits won’t throw you around nearly as much as before.

Steel side-steps are the Tremor package’s only off-roading bummer, even though we love a good set of rock sliders and appreciate the added protection. Ford says they don’t inhibit ground clearance, but steel steps like this tend to hang up on obstacles. Ford doesn’t offer rock sliders without the steps direct from the factory, so you’ll have to yank them and buy your own separately.

In terms of power, Ford has a class-leading powertrain in its 2.3-liter turbocharged I-4 and 10-speed automatic, but the off-road hardware adds a little more than 100 pounds compared to a standard Ranger Lariat with four-wheel drive. No surprise, the Ranger Tremor (also a Lariat trim) was 0.3 second slower to 60 mph. Seven seconds flat still puts it on the quick end of the segment, and the immediate punch of the 270-hp, 310-lb-ft turbo-four is a lot more satisfying on the road than winding out the Colorado’s higher-hp, lower-torque V-6.

A deterioration in emergency braking distance is no surprise, either. Off-road tires don’t have the same traction on the street as highway tires, and they extended the Tremor’s stopping distance from 60 mph by 18 feet, to 140. That’s 7 feet longer than the heavier Colorado ZR2 on its Goodyear Wrangler all-terrains. The Tremor parts also aren’t great for fuel economy, which drops



to 19 mpg city/highway/combined, from 20/24/22 for a regular four-wheel-drive Ranger. On the other hand, we like the six auxiliary switches on top of the dashboard for controlling your aftermarket equipment; otherwise, it’s the same grab-bag interior of decade-old parts.

Every automaker makes its most capable off-road model its most expensive model, but Ford will let you put the Tremor parts on a midlevel XLT trim or the top-spec Lariat. However, you can only get it on the four-door Super Crew body style, which drives up the base price. It also requires you to upgrade your equipment level, raising the price further and making the \$4,290 Tremor package more expensive than advertised: The true price differences are \$5,960 on an XL, and \$6,295 on a Lariat.

Regardless, the value quotient is high, and the Tremor is cheaper than the competition. At \$41,900 to start on an XLT, it undercuts the mono-spec Colorado ZR2, Tacoma TRD Pro, and Gladiator Rubicon by more than \$2,000 each. The Lariat’s \$46,275 base price is about \$2,000 more than those competitors’ base prices, but it comes with more standard equipment. Our test truck, with minimal options, rang

2021 Ford Ranger Lariat Tremor

| | |
|-----------------------------|---|
| BASE PRICE | \$46,275 |
| PRICE AS TESTED | \$46,865 |
| VEHICLE LAYOUT | Front-engine, 4WD, 5-pass, 4-door truck |
| ENGINE | 2.3L/270-hp/310-lb-ft turbo DOHC 16-valve I-4 |
| TRANSMISSION | 10-speed automatic |
| CURB WEIGHT (F/R DIST) | 4,660 lb (57/43%) |
| WHEELBASE | 126.8 in |
| L x W x H | 210.8 x 73.3 x 71.5 in |
| 0-60 MPH | 7.0 sec |
| QUARTER MILE | 15.3 sec @ 91.0 mph |
| BRAKING, 60-0 MPH | 140 ft |
| LATERAL ACCELERATION | 0.71 g (avg) |
| MT FIGURE EIGHT | 29.1 sec @ 0.56 g (avg) |
| EPA CITY/HWY/COMB FUEL ECON | 19/19/19 mpg |
| ENERGY CONS, CITY/HWY | 177/177 kWh/100 miles |
| CO2 EMISSIONS, COMB | 1.02 lb/mile |

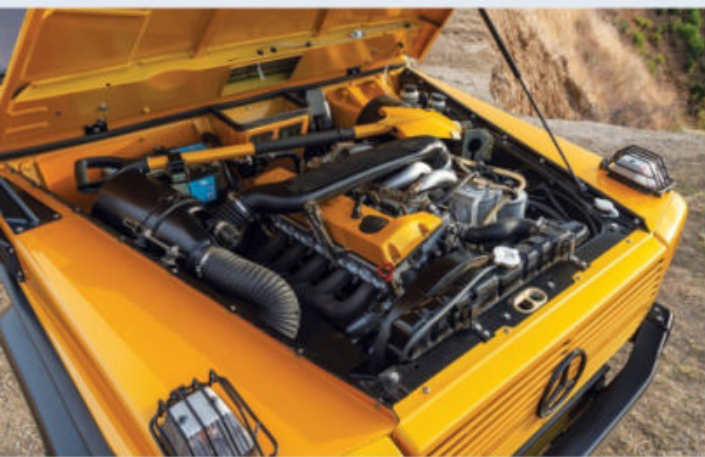
in at \$46,865, a steal compared to the last \$60,000 Gladiator Rubicon we drove.

You’re into a four-door, four-wheel-drive Ranger XLT for \$35,940, minimum. The extra cash for the Tremor package and mandatory equipment upgrade isn’t cheap, but on top of its off-road capability, you get the best riding/driving Ranger while sacrificing zero towing capability and just a little payload capacity. The competition can’t match this deal. ■



The Terrain Management button switches between Normal, Grass/Gravel/Snow, Mud/Ruts, and Sand modes.

The Wikipedia entry on the first-gen Mercedes-Benz G-Wagen says the truck needed 27 seconds to hit 62 mph. In my case, foot flat on the floor, hustling the long shifter as quickly as I could, I stopped counting after 15, because who cares at that point? This is a vehicle with a supposed top speed of 112 kph, or 70 mph, on flat ground at sea level; I got it up to 120 kph (75 mph) going down a big hill on the freeway. No, an ex-military G-Wagen redone by Expedition Motor Co. isn't about speed whatsoever, and that's half its charm.



You don't need to drive a 1990 Mercedes-Benz 250GD like this one with your foot quite on the floor constantly to keep up with modern traffic, but you might as well. The naturally aspirated I-5 diesel was chosen for its durability and longevity, not its 93 horsepower and 117 lb-ft of torque.

Hills are a problem. Driving this \$102,150 attention magnet through Malibu, California's canyons—where corners are tight and keeping your momentum up isn't an option—I tried to keep my speed at more than 20 mph. Choosing the right gear is a constant game; technically a dogleg five-speed, it's really an H-pattern four-speed with a crawler gear. That crawler gear is where you'd expect second to be, and reverse is where first would usually be. It feels like you're starting in third when you put it in first, because you just push the shifter forward.

Even in first, there's so little torque that you need to slip the clutch a lot more than you expect. It's much easier to get moving smoothly in that crawler gear, even if the engine runs out of revs before

the speedometer—which begins at 20 kph, or 12 mph—even registers movement. Oh, and there's no tachometer, so you just guess about shift points. Right around the time the engine sounds like it's going to explode is a good rule of thumb.

This is all exactly the way EMC founder Alex Levin likes it.

Every G-Wagen EMC restores is an ex-military model, usually a 1990–92 example, as they're the youngest of the first-generation G but old enough to qualify for U.S. importation. The company has direct lines to multiple European military forces, so it can pick and choose the best examples. German NATO forces used this particular one in Afghanistan.

Levin, originally from Belarus, prefers the military spec known as the Wolf in the German military, for its fold-down windshield and soft top. But he'll build you one with the factory optional hard top, automatic transmission, and/or gasoline engine if you ask nicely.

Once EMC has the truck in one of its facilities, it strips it to the last bolt. In a departure from most other restorers of old off-road SUVs, EMC puts almost everything back the way it was. Engine swaps are off the table. Levin won't even install the turbocharged diesel offered in other Mercedes-Benz products of the era. He likes his Wolves the way Mercedes built them originally, and that's how he rebuilds them today. He's not interested in doing engine swaps, so he doesn't.

A few features make EMC's Wolves resto-mods instead of restorations, among them

CALL OF THE WOLF

EMC'S G-WAGEN RESTOMOD IS AS COOL AS IT IS SLOW

WORDS SCOTT EVANS
PHOTOGRAPHY DARREN MARTIN



The shiny plaque between the shifters would be easy to spot even if it didn't have "Expedition Motor Company" engraved between the shift patterns.



The seats don't do a lot to keep you from falling out. At least the driver has the steering wheel to hold onto. Passengers have few options.

air conditioning by Vintage Air, a four-speaker Clarion stereo, modern LED headlights and taillights, a 1.6-inch lift courtesy of Eibach springs and Bilstein dampers, nonstandard colors for the vinyl interior with contrast stitching, and any single-stage paint color you can find the code for.

The list of optional extras is equally short. EMC makes a winch-ready front bumper (with or without winch), a bull bar, and wire guards for the headlights, turn signals, and taillights. It'll also fit a snorkel kit and jerry can made by Mercedes, and aftermarket foglights. End of list. The body-color shovel stored literally on top of the engine? That's standard.

Other EMC-made bits are necessary parts of the restoration. For example, Mercedes no longer produces the rear roof structure, so EMC re-creates it, and the fabric roof itself is a reproduction. Custom wood panels in the rear incorporate stereo speakers. The suspension is upgraded from rubber to polyurethane bushings with eccentrics to account for the lift. Cupholders up front look like they could be original, but they're custom.

All of the old-school off-road hardware is present and accounted for. Mercedes designed the transfer case with two four-high gears, each on different synchros, so you can shift from two high to four high to four low without stopping—very handy in a vehicle where you can't afford to lose momentum. Two unlabeled knobs actuate the hydraulic axle lockers. Given the price tag and the shiny paint job, we didn't do any serious off-roading with the Wolf, and EMC says most of its customers don't, either. But with BFGoodrich All-Terrain T/A tires and this much clearance all

around, you'd need to get yourself into some real deep snow or mud or on a pretty gnarly trail to even need four-wheel drive.

Like most six-figure restomod off-landers, these Wolves will likely spend retirement as beach runners and weekend toys. And with meaty sidewalls and modern shocks, the Wolf actually rides nicely. Yeah, the whole body shakes when you hit a bump, but surprisingly little vibration makes it into the seats. It's actually pretty nice to putter around town in, so long as you don't want to hold a conversation without yelling.

Meanwhile, you wouldn't expect it on an old truck, but EMC's Wolf has better brake feel than some sports cars. The pedal is pleasantly firm, bites immediately, and provides linear stopping power.

Stopping is about the only thing it does quickly. The steering is slow and light on center, weighting up like only an old car can when you turn past 45 degrees. For a tall, heavy truck, it corners OK, but you want to treat suggested corner speed signs as gospel. The way it leans over, you might fall out if you don't grab something.

This is the EMC Wolf. It's all contradictions and compromises, but

1990 Mercedes-Benz 250GD EMC Wolf

| | |
|------------------------------|---|
| BASE PRICE | \$102,150 |
| VEHICLE LAYOUT | Front-engine, 4WD, 4-pass, 2-door SUV |
| ENGINE | 2.5L/93-hp/117-lb-ft diesel SOHC 10-valve I-5 |
| TRANSMISSION | 5-speed manual |
| CURB WEIGHT | 4,450 lb (mfr) |
| WHEELBASE | 98.5 in |
| L x W x H | 166.3 x 66.5 x 76.4 in |
| 0-60 MPH | 27.0 sec (MT est) |
| EPA CITY/HWY/COMB FUEL ECON | 15/17/16 mpg (MT est) |
| ENERGY CONSUMPTION, CITY/HWY | 225/198 kWh/100 miles (MT est) |
| CO2 EMISSIONS, COMB | 1.40 lb/mi (MT est) |
| ON SALE | Now |

each of them contributes to its charm. The original truck was built to a purpose then repurposed for something entirely different, and it's somehow just as good at its new task. No, the Wolf doesn't have a supercharged V-8 like other restomod off-landers often do, but frankly, it's cooler for going its own way. ■





BMW 228i

BMW X7



Updates on our long-term fleet

MT GARAGE

PHOTOGRAPHY MT STAFF



Arrival: 2021 Volvo XC40 T5 AWD (R-Design)

**EPA City/Hwy/Comb Fuel Econ**
22/30/25 mpg**"Charming design? Check. Lots of features? Check. Fun to drive? Can't wait to see." Mark Rehtin****Base Price \$41,945 As Tested \$44,890**

The tricky thing when trying to establish your brand as a player in the luxury stratosphere is pushing yourself past merely premium accoutrement. This is what confronts marketers from Acura, Buick, Genesis, Infiniti, and Volvo when proving bona fides against established German luxury.

Volvo has long produced sturdy premium vehicles with just enough elegance to justify the higher purchase price over a loaded vehicle from a mainstream brand. But now we're seeing vehicles from Gothenburg such as the S90 and V90 (and from what we hear, the XC90 coming next year) that place Volvo firmly on the luxury shopping list against the dominant German brands.

Enter the XC40, a spritely subcompact SUV that puts Volvo back into its premium-mentality comfort zone.

But the Germans have been swimming downmarket and brought the fight for budget-luxury shoppers to Volvo's door with vehicles like the Mercedes-Benz GLA, Audi Q3, and BMW X1. So who builds the better product—a longtime premium automaker playing in its well-established sandbox, or the true luxury brands looking to expand their presence?

Well, we have a year to find out, as we just took delivery of our charming long-term XC40 T5 AWD R-Design.

Base XC40 MSRPs start as low as \$34,795. But we got ours loaded up with enough goodies to push the sticker to an as-tested \$44,890. What did that extra 10 grand get us?

The "T5" code means a 2.0-liter turbocharged four-banger that cranks out 248 hp and 258 lb-ft (up from 187 and 221 in the base T4), mated to an eight-speed automatic and

all-wheel drive. The suspension is a front MacPherson strut and rear multilink setup, riding on 19-inch aluminum wheels. The R-Design boasts a "sport chassis" setup, which has stiffer shocks and springs than the standard "dynamic" setup. We decided not to spring for the Four-C active chassis setup.

What else does R-Design get you? Some upgrades in materials, such as a laminated moonroof, a different front grille design, leather steering wheel and shift knob, Volvo-branded tread plates in the front door sills, and snazzier gas and brake pedals. There are also some practical add-ons, such as keyless locks, a hands-free tailgate, integrated

roof rails, dual-zone climate control, and HomeLink garage door controls.

The driver sees a 12.3-inch digital instrument panel that also has quick-view displays from the trip computer, map, or radio. The center waterfall has Volvo's ubiquitous 9.0-inch Sensus Connect infotainment screen with Apple CarPlay and Android Auto, as well as Bluetooth connectivity. It also serves as a Wi-Fi hot spot. Front and rear occupants each get two USB ports. A trial subscription to SiriusXM satellite radio blasts through the 650-watt, 13-speaker Harman Kardon stereo.

Our XC40 also comes with the \$1,300 Advanced package, which provides a 360-degree surround-view camera, 12-volt outlet in the cargo area, inductive phone charging, adaptive cruise control, and high-pressure headlight cleaning. I'd say that's a well-priced set of features.

As for safety, XC40 adds the usual blind-spot and lane departure warnings but then brings post-collision automatic braking, as well as the City Safety system, which can detect bicyclists or pedestrians day or night. Its LED headlights and foglights "corner" with steering inputs.

SPECS VEHICLE LAYOUT Front-engine, AWD, 5-pass, 4-door SUV
ENGINE 2.0L/248-hp/258-lb-ft turbo DOHC 16-valve I-4
TRANSMISSION 8-speed automatic **CURB WEIGHT (F/R DIST)** 3,807 lb (58/42%) **0-60 MPH** 6.2 sec **QUARTER MILE** 14.7 sec @ 93.0 mph
BRAKING, 60-0 MPH 111 ft **LATERAL ACCELERATION** 0.86 g (avg)
MT FIGURE EIGHT 27.4 sec @ 0.62 g (avg) **ENERGY CONS, CITY/HWY** 153/112 kWh/100 miles **CO2 EMISSIONS, COMB** 0.78 lb/mile

Height 65.3"

Wheelbase 106.4"

Length 174.2"

Width 73.3"

| | | | | | | |
|---|---|---|--|---|---|---|
| VERDICT GENESIS G70 | HONDA CIVIC SI | HYUNDAI SONATA | KIA SOUL | UPDATE KIA TELLURIDE | UPDATE MAZDA 3 | MAZDA CX-30 |
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|  |  |  |  |  |  |  |
| MERCEDES-BENZ GLE 450 UPDATE | NISSAN SENTRA | RAM 2500 HD | SUBARU OUTBACK UPDATE | TOYOTA GR SUPRA UPDATE | TOYOTA VENZA UPDATE | VOLVO XC40 ARRIVAL |



Volvo's always-comfy power heated seats are crafted in Nappa leather.



If the XC40 detects you crossing the centerline into the path of an oncoming vehicle, it will swerve you back into your proper lane. It will also alert you if your driving inputs appear fatigued compared to the path of the road and will use the maps function to suggest a place to stop. And of course, it has airbags galore.

Technically a safety item, it also comes with front and rear park assist. Many automakers' systems talk a good game but do poorly when real-world execution is required; we'll see how the Volvo matches up.

The XC40 comes with complimentary factory scheduled maintenance that covers the first three services (10,000, 20,000, and 30,000 miles) at no charge, as long as you come in within the first three years or 36,000 miles.

Even though the health scare has us taking great care with where we drive, we still expect to get plenty of use from the XC40. In fact, as soon as we took the keys, we were off to our vacation home in Paso Robles wine country. Details to come.



Our XC40 is resplendent in Bursting Blue Metallic paint with a black roof.



Toyota GR Supra



Service Life: 7 mo/3,920 mi
Average Fuel Econ: 23.7 mpg

"The Supra has been popular among staffers, and the individual praises typically match my own." Chris Walton

Avg CO2 0.82 lb/mi **Energy Cons** 140 kWh/100 mi **Unresolved Problems** None **Maintenance Cost** \$0 **Normal Wear Cost** \$0 **Base Price** \$54,945 **As Tested** \$56,565 **EPA City/Hwy/Comb Fuel Econ** 24/31/26 mpg

Thomas Rosquin, *MotorTrend's* resident internet search and business expert, needed a long weekend getaway car. I happily tossed him the key to our 2020 Toyota Supra, and he sped off. After returning from his 500-mile road trip, he sent me this list of things he loved, and I agree with almost every one of his points.

What We Love About the Supra: It's sexy as hell. The Supra looks great. "Daddy like those big rear fenders," Rosquin said. He also noticed quite a few of what he called "bro nods." "Lambos are boring," he said. "Real car people lust for the Supra. I got tons of nods, thumbs-ups, waves, and cheers from car enthusiasts driving everything from an old BMW M3 to a new Subaru BRZ."

It's also, of course, great to drive: "extremely quick and fun," in Rosquin's words. Its turbo engine combined with sticky Michelin Pilot Super Sport tires makes it "a real blast." The exhaust's gargles, burbles, and pops in Sport mode were music to Rosquin's ears.

But it's not just the performance that matters. Our Supra's Safety and Driver Assistance package adds a host of aids to take stress off the driver. Rosquin called out the radar cruise control and lane keep assist, noting that the latter relied on gentle nudges

to maintain the center of the lane rather than bouncing back and forth between the lines. Cargo capacity isn't necessarily a Supra strong suit, but that, too, stood out. He managed to fit a large suitcase, backpack, bathroom bag, coat bag, and cooler into the trunk for a trip up the coast—plenty of stuff for him and his wife.

Comfort wasn't a problem, either. The seats are super comfortable and multiway configurable. Its dual-zone climate controls and heated seats made for an uncontentious trek, and the ease of entry/exit was, for a low sports car, excellent. After eight hours of driving, Rosquin had no complaints. Over the long weekend, he averaged just a bit more than 25 mpg, which ups our Supra's running total closer to its EPA estimates; with a few more trips like this, we think we could just about match them.

It wasn't all perfect, though. In a future update, we'll share a few staff criticisms.





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MT GARAGE | Updates

Mercedes-Benz GLE



Service Life: 6 mo/10,049 mi

Average Fuel Econ: 19.3 mpg

"What's our bouncy long-term luxury SUV like in the snow? Time to find out!" Jonny Lieberman

Avg CO2 1.01 lb/mi **Energy Cons** 177 kWh/100 mi **Unresolved Problems** None **Maintenance Cost** \$377.01 (inspection, oil change) **Normal Wear Cost** \$0 **Base Price** \$62,745 **As Tested** \$89,385 **EPA City/Hwy/Comb Fuel Econ** 19/24/21 mpg



Most people wrongly think of Los Angeles as a desert—it's actually a Mediterranean/subtropical climate—but they don't know that less than 25 miles from downtown, we get plenty of snow up in the mountains. Not only that, but less than 100 miles from the city center exists a winter wonderland of a weekend getaway called Big Bear. As of this writing (through January), Big Bear has received 9 feet of the white stuff. On a recent trip, 28 inches of snow dumped on top of our long-term GLE450 4Matic, raising the question: How does Mercedes' midsize SUV handle serious weather?

Before we go any further, let's talk tires. The GLE450 has a set of Vredestein Wintrac Pros. Why's that? As a company, we drive hard, and perhaps the GLE was pushed a little harder than optimal during its use as a support vehicle for our 2020 Best Driver's Car test. Hey—you try keeping up with Ferraris, Lamborghinis, GT500s, Corvettes, and Porsches in your mall cruiser. Off went the prematurely bald OE Continentals, on went the Vreds. True, most of my driving would be around-town stuff, but in my opinion, winter tires are better than all-seasons.

Our photographer Brandon Lim was driving the newly snow-shoed GLE when the first winter snows fell up in the San Gabriel Mountains that overlook the L.A. basin from the north. Lim and another staff photographer, Renz Dimaandal, went to the top of State Route 39 for some photos. Lim's tire report, via text: "They are [censored] amazing. Renz and I helped rescue half a dozen cars stuck in the snow, while the GLE was just invincible." Strong praise, indeed. Praise that made me all the more desperate to get up to the snow. So off to a cabin in the mountains we went.

I have a mixed history of driving Mercedes' products in snow, so I was a touch trepidatious of taking this vehicle into the white stuff. Totally unfounded worries, it turned out. The GLE450 was brilliant the day we arrived, handling the existing snow, mud, mung, and ice with ease. OK, fine, nothing but studded tires handle ice, but the Mercedes-Benz's three-plus tons (5,438-pound curb weight plus husband, wife, kid, dog,

and all the accompanying winter stuff) easily cracked through whatever thin ice there was, finding purchase below. The Wintrac Pros and the 4Matic system made for a pretty potent combination.

That night it snowed. Like I said earlier, it really snowed—28 inches of the stuff. It buried the GLE. I was so excited to try to claw the Benz out that I couldn't sleep. Was I worried I'd get stuck? Not really, because the much-loved bouncy suspension feature (called Free Assist) is designed to bounce the GLE out of sand, mud, and snow. Failing that, I had a set of chains and a pair of off-brand recovery tracks. I also had a tow strap in my bag, and I noticed some pretty beefy-looking 4x4s parked down the street. Also, it's Big Bear, not Big Bend. I could call a wrecker. We were in no danger.

I used a shovel to dig out enough snow to get into the driver's seat. Then I started it up, switched on the defroster, climbed back out to knock snow off the windshield, then got back in, selected drive, put the thing in Off-Road mode, and ... drove right out. No problem whatsoever.

I did a couple laps around the block just to try to find anything challenging. I encountered a jacked-up 4x4 Ford E-Series van futilely spinning its tires trying to crab its way up a hill. I just passed him. To recap, with the exception of studded tires, I've never driven anything as surefooted as this SUV was in snow. That includes G-Wagens. I now refer to this GLE as Baby-G, not to be confused with the Casio Baby-G or the long-rumored small G-Wagen that Mercedes will probably never build. Our "neighbors" later commented to me that they didn't think the Mercedes would be able to escape its snowy bonds. Wrong!



Toyota Venza



Service Life: 2 mo/3,950 mi
Average Fuel Econ: 33.6 mpg

"We road-tripped the Venza to Houston and back—more than 4,000 miles—to assess its long-distance comfort." Miguel Cortina

Avg CO2 0.58 lb/mi **Energy Cons** 99 kWh/100 mi
Unresolved Problems None **Maintenance Cost** \$0
Normal Wear Cost \$0 **Base Price** \$37,175 **As Tested**
\$39,735 EPA City/Hwy/Comb Fuel Econ 40/37/39 mpg



I wrapped up 2020 the same way I started it, with a cross-country trip from Los Angeles to Houston. Last year I drove our long-term Volvo S60 to visit my family during the holidays and had such a great time, I decided to repeat it. This go-around, my chariot was our 2021 Toyota Venza—the hybrid-only SUV that serves as an alternative to the off-road-looking RAV4 in Toyota's SUV lineup. This was the first time I took the Venza on a long road trip, and overall it excelled.

My trip started before 5 a.m. when I left Playa del Rey and headed south to San Diego, where I then took I-8 to Tucson then continued on to El Paso, Texas, where I spent the first night. In total, I traversed 853 miles and averaged 33.5 mpg, according to the Venza's computer.

After 11 hours of driving, I found the seats very comfortable with great back and thigh support. The optional SofTex package—which includes leatherette seats; heated, ventilated, and powered front seats; and a heated steering wheel—felt worth the \$510. Crossing the desert in the winter means cold and hot temperatures throughout the day, so I used both the heating and ventilation often.

On day two I stopped in Marfa, Texas, a town in the middle of the Chihuahuan Desert with chic shops and art galleries that will make you think you're on Abbot Kinney Boulevard in Venice, California, or somewhere in Brooklyn. Then, during a quick stop in nearby Valentine, I visited the famous Prada sculpture, which artists Elmgreen and Dragset permanently installed in the middle of the desert—a taste of what the area is really all about.

The Venza produces an invasive amount of tire noise, and the cabin was loud when we drove over harsh pavement, but the ride was always settled. With the 2.5-liter I-4 and three motors forming an e-CVT, the Venza feels adequately powered, but it lacks the punchiness of the turbo I-4s and V-6s powering others in the segment.

I arrived in Houston after driving 1,726 miles over three days, averaging 34.2 mpg. I confess I was getting tired toward the end, but visiting all these great places gave me a taste of Texas that I had not savored before, despite having lived eight years in the Lone Star State.

With my brother tagging along on the way back, the drive was more enjoyable. Our first stop was Big Bend National Park, but before we got to our hotel in Alpine, a massive winter storm dropped more than 24 inches of snow in some parts of the state, making the roads icy and dangerous. The Venza comes with standard all-wheel drive, which was useful during this part of the trip.

The next day we left for Tucson. We stopped at El Paso for lunch and noticed how close Ciudad Juárez really is from its northern sister city, as we got a panoramic view of it driving on I-10. Sitting in the front passenger seat, my brother had quite a bit of trouble with the capacitive buttons on the center console. He confused the temperature controls for the radio tuning controls and often hit the wrong button, given they're very sensitive.

Interior space is a weak point. Despite Toyota positioning the Venza between the RAV4 and the Highlander, it has less space than even its smaller sibling. That was especially notable on the return trip when we carried two large suitcases, a bag of golf clubs, and a couple of biggish boxes. Even with the rear seats folded, cargo space is limited.

We continued our way west on I-8. After our visit to White Sands National Park last year, we decided to visit the Imperial Sand Dunes in California for a Sahara-like experience. Although it's not nearly as impressive as the African desert, the scenery is beautiful, and it served as our last stop before we ended our trip.

With 4,020 miles added to the odometer, the Venza proved itself to be a comfortable and efficient SUV. At 33.2 mpg on average, our trip fell a bit below the EPA's ratings; blame weather and high speed limits for that. There will be more road trips with the Venza, but this one was a great start.



Big Bend National Park has stunning vistas, but the Venza stayed in the parking lot.

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Mazda 3

Many automakers eschew a spare tire in favor of space-saving sealant goo. We're glad Mazda has the former.



Service Life: 13 mo/18,576 mi
Average Fuel Econ: 28.8 mpg

"We appreciate having a true spare tire when you need one."
Erick Ayapana

Avg CO2 0.67 lb/mi **Energy Cons** 116 kWh/100 mi **Unresolved Problems** None **Maintenance Cost** \$144.03 (oil change, inspection, tire rotation) **Normal Wear Cost** \$0 **Base Price** \$24,520 **As Tested** \$28,420 **EPA City/Hwy/Comb Fuel Econ** 25/35/29 mpg **Real MPG** 33.9 mpg comb



Time with our long-term 2020 Mazda 3 is coming to a close, and we're just a few thousand miles away from hitting 20,000 on the odometer. A couple of staffers happily took the keys to the 3 for long-distance journeys, and both reaffirmed Mazda's hatchback is a comfy and competent road-trip car.

First up was associate online editor Alex Leanse, who racked up 1,500 miles during his trip to Northern California. Leanse is our resident tall guy—he stands 6-foot-10—so we wondered how the 3 would accommodate a driver of his stature. "The Mazda 3 hatchback has once again proven itself to be a sweet road-trip machine," he said. "The driver's seat remained comfortable on long slogs." He also gave

high marks to the Bose sound system, fuel economy, and rear cargo space.

Leanse was less enthused with the 3's driver assist technology. The adaptive cruise control detected and reacted to objects that weren't on the road, most notably on curves. He also noted that after accelerating to pass with ACC engaged, "It'd brake quite strongly to return to the set speed." Hopefully some software updates can rectify those issues.

As he enjoyed twisty canyon roads east of San Jose, Leanse unfortunately ran into some bad luck with a pothole that slashed a tire. On the upside, he discovered our 3 is equipped with a compact spare tire (which I prefer over repair kits with the sealant solution that

gets messy and makes me second-guess their effectiveness).

Following Leanse's trip, our director of editorial operations, Mike Floyd, headed east to Phoenix. Floyd also appreciated the Mazda's spacious cargo area, which was more than adequate for his and his mother's luggage.

"I was pleasantly surprised by the car's quiet, composed nature," Floyd said. "At freeway speeds its NVH was better than I expected, the engine note was almost too muted, and road noise was limited to a dull roar."

His only gripe? A lack of power, though he admits his most recent point of reference was his personal Subaru WRX. "I bet with the 2.5 turbo, this car will be transformed."

Subaru Outback

Our Outback started with two power liftgate buttons. Now it just has one. We'll get this checked out at the dealership soon.



Service Life: 8 mo/9,304 mi
Average Fuel Econ: 21.1 mpg

"Is the Subaru Outback a safe SUV? Here's what you need to know."
Zach Gale

Avg CO2 0.92 lb/mi **Energy Cons** 160 kWh/100 mi **Unresolved Problems** Liftgate close button **Maintenance Cost** \$0 **Normal Wear Cost** \$0 **Base Price** \$35,905 **As Tested** \$37,995 **EPA City/Hwy/Comb Fuel Econ** 23/30/26 mpg **Real MPG** 24.5 mpg comb

Subaru has built its reputation on safety, reliability, and the convenience of standard AWD on every vehicle it makes. (Well, almost everything.) But the Outback's safety systems have some odd quirks. Before we dive in, here's the story on a new issue affecting our Subie.

About Our Outback's Power Liftgate ...

The feature isn't available on the base trim, but the next trim up offers a package that adds a power liftgate with a memory-height function and two buttons to close it: One just closes the liftgate, and the other closes and then automatically locks the car. The latter helpful feature is one I look for in every power liftgate.



Well, I appreciated the close-and-lock button until it disappeared the other day. After the button didn't respond the first time I pressed it, I tried again with the same, normal amount of force. The shy button then

left its normal place and hid in the safety of the liftgate's assembly, where it is now.

Like an increasing number of SUVs, the Outback's power liftgate comes with a hands-free feature. Hold a hand or arm over the rear emblem with the key fob in your pocket, and the liftgate will open. That's an improvement over what most automakers offer, where you have to wave a foot beneath the rear bumper.

Back to Safety ...

The Outback is one of the safest vehicles in its class. Part of that comes from its superior all-around visibility from within. You like the bold curves of the Chevrolet Blazer and Nissan Murano? I do, too, but they have a serious effect on rear vision. Except for a rearview mirror that's a bit more in the driver's face than in some SUVs, the Outback does well with visibility.

Unfortunately, its safety systems can be annoying. When the lane departure system can no longer sense lanes on the road, an alert appears in the instrument cluster's info screen. Fine. What we could do without is the chime the system makes to communicate the same thing. At least on roads around Los Angeles, the system often detects and then loses sight of lanes—no problem. Although my husband and I enjoy pretending each chime indicates we've earned a couple video game coins, I'd much rather the alert be silenced. There is a way to remove part of the lane departure/lane keeping's functionality, but then an overly urgent orange alert appears in the instrument cluster. On a 2,000-mile road trip, senior copy editor Jesse Bishop kept mistaking the alert for a low fuel warning and wished the light weren't so big and bright. Agreed.

Kia Telluride

Our final trip readout. I thought about going for empty, but that would've made for a long day.



Service Life: 10 mo/17,008 mi
Average Fuel Econ: 21.0 mpg

"We experience the simple pleasure of a road trip to nowhere in the Kia Telluride."

William Walker

Avg CO2 0.92 lb/mi **Energy Cons** 160 kWh/100 mi
Unresolved Problems None **Maintenance Cost** \$0
Normal Wear Cost \$0 **Base Price** \$35,085 **As Tested** \$36,015
EPA City/Hwy/Comb Fuel Econ 20/26/23 mpg



I'm guessing I'm not the only one who's become way too familiar with my surroundings. Sometimes, you just have to get away. But where to go?

I don't want to endanger myself, my wife, or anyone else. The mountains are always a good option, but just because I'm feeling stir-crazy doesn't mean I should put the people of a small mountain community at risk. This was the thinking that led me to wonder: What if I don't stop? What kind of road trip can I do on a single tank?

We packed a lunch so we wouldn't have to stop for food, filled up at our local gas station, and hit the road. Our route would take us east to the small mountain town of Idyllwild, California. We would continue past Lake Hemet, through Temecula, and eventually, after many hours, find our way back home. Google Maps put the trip at 270 miles, and although that theoretically wouldn't run the tank dry, Idyllwild sits atop a beautiful, dramatically twisty mountain road, above 5,000 feet elevation. My wife and I tend to take a lot of detours to explore interesting roads we come across, so I figured by the end of the day we'd have covered enough miles that the Telluride would be sucking vapors.

Before we got to the mountainous portion of the trip, we had 100 miles of highway driving. The Telluride's front seats are comfortable, and even in our low-spec Telluride S, the stereo is decent. The package of Drive Wise features, including radar cruise control, makes long stretches of highway cruising a breeze.

The Telluride is also very roomy. This trip only involved me, my wife, and our dog; I very rarely use the rear seats for human occupants, but the sliding second-row bench seat is great for our canine hammock. Our worthless fleabag (read: valued member of the family) is on the smaller side, and I like to slide the seats forward to minimize the distance he would move around in the event of an emergency stop. With the third row stowed and the second row slid all the way forward, the Telluride has a cavernous amount of cargo room. The ceiling-mounted climate control vents offer an additional comfort feature for our

furry family member; many pet hammocks and seat protectors block the vents located low on the rear center console.

As straight highway gave way to twisty switchbacks, the Kia never hiccuped. This is one of the better-handling SUVs in the three-row segment, and if you're going to frequent twisty mountain roads, I highly recommend the AWD version. But with the dog in the back seat, I wasn't pushing the grip limits, and our front-driver handled just fine. The 3.8-liter V-6's 291 hp and 262 lb-ft of torque was more than enough to keep us moving as we climbed.

We continued through picturesque Idyllwild and stopped at a mountain overlook near Lake Hemet for our picnic lunch. Breathing the thin, pine-scented mountain

air was quite refreshing and paired perfectly with our sandwiches.

The road home leads south out of the mountains and descends in a much more subtle manner. We connected back with the highway near Temecula and spent the final 90 miles of our drive lamenting our short-lived visit to the mountains and daydreaming of owning a cabin in the woods. As we pulled into our driveway, the trip computer read 330.2 miles with an indicated fuel economy of 23.8 mpg. Did we almost run dry? Not even close. We still had more than a quarter of a tank and an estimated 150 miles to empty.

Although our trip didn't end in a nail-biting coast to a gas station, it was a much-needed respite. It also highlighted the Telluride's strengths as a road-trip vehicle.

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We replaced a chunking tire. Donuts not involved.

Verdict: 2019 Genesis G70



"Would I recommend? Yes. Are there better alternatives? Yes, as well."
Mark Rehtin

SPECS Options Elite package (\$1,750: rain-sensing wipers, parking sensors, wireless charging pad) **Problem Areas** Transmission replacement, turbocharger hose leak, wiper installation, chunking tire **Maintenance Cost** \$0 (inspection, oil change) **Normal Wear Cost** \$989.96 (set of four tires) **3-Year Residual Value*** \$28,900 (62%) **Recalls** None

*IntelliChoice data; assumes 42,000 miles at the end of 3 years

Base Price \$44,745 **As Tested** \$46,495

Service Life: 15 mo/16,812 mi **Avg Econ/CO2:** 20.1 mpg/0.97 lb/mi

Chapter 3 of the automotive journalists' handbook specifies that any time a luxury car brand launches a new compact sedan, we must engage in endless handwringing as to whether said car is better than the BMW 3 Series.

It doesn't matter if the current 3 Series is any good. It is. It's just not great. Times have changed; in the good ol' days, 3ers were indomitable, with zingy engines, sharp handling, and a firm but compliant ride. Now they're a bit heavy, the handling a tad loafy, and the ride a bit severe.

As we found with our previous Car of the Year-winning Alfa Romeo Giulia, BMW's titan is vulnerable to new challengers. So when Hyundai's luxury arm rolled out the G70, executives channeled the words of Lloyd Christmas: "So you're telling me ... there's a chance?"



Yes, indeed. And as our comparison tests have shown, the G70 is a better 3 Series than the 3 Series. At least in terms of how purists remember the era of the great E30, E36, and E46: The G70 is nimble, sharp, and thrilling, with rorty acceleration in its turbocharged V-6 trim.

But what is it like to live with a Genesis? In our 15 months and nearly 17,000 miles, we found the G70 to boast a clear vision of what it means to be a compact luxury sport sedan. Our staff came to know the

Genesis as a favorite long-hauler for its composed suspension and graceful manners that made long distances evaporate. And its sleek styling drew plenty of second glances and questions from people who encountered it.

The G70 3.3T's 0-60 acceleration clocked in at a brisk 4.5 seconds. The quarter-mile run came through in 13 flat at 108.5 mph. While markedly quicker than the comparably priced Lexus IS350 F Sport RWD, the G70 is a shade slower than the BMW M340i and Mercedes-AMG C 43 that cost \$10,000 to \$15,000 more.

However, a lack of grip from the Michelin Pilot Sport 4 255/35ZR19 tires often meant the 365-hp, 376-lb-ft powertrain overwhelmed the rubber, resulting in wheelspin and traction control intervention. That may be fun when exiting a closed-course corner, but entering a heavily trafficked boulevard required a less firm right foot until things settled down.

Although it might be a while before we commute consistently again, the Genesis' smart cruise control system is among the industry's best at gauging following distance and the initiation of slowing down, stopping, and re-engaging with city traffic. However, features editor Scott Evans noted its smart cruise is less capable on open freeways prone to surging speeds—often unnervingly late to engage the brakes for stopped traffic.

We are big fans of the G70's user interface and user experience of the Hyundai-derived infotainment system. Intuitive, logical, and clear, the G70's willingness to bounce between CarPlay, satellite radio, and the Genesis' excellent native maps/traffic app won our hearts. The integrated screen is a bit small, but we've heard rumors that it will get larger for the 2022 model year.

The G70's interior refinement shows a confident brand; the toggles, switches, stalks, dials, and knobs all feel premium and high-quality. The cross-stitched leather seats were lovely for long drives, though I personally could never get a "just right" setting for lumbar support. #FirstWorldProblems.

Unfortunately, the feeling of quality did not extend to our vehicle's build. Almost immediately, the G70 had some issues with its transmission and turbocharger hose, requiring replacements of entire units. Then we discovered the windshield wipers were reverse-installed on the assembly line. Derp. From a brand listed





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Interior fit and finish, grain and gloss, and tactile responsiveness of dials, buttons, and switches were all appropriate for a luxury-badged sedan.

2019 Genesis G70 3.3T (RWD Advanced)

| | |
|----------------------------|---|
| DRIVETRAIN LAYOUT | Front-engine, RWD |
| ENGINE TYPE | Twin-turbo 60-deg V-6, alum block/heads |
| VALVETRAIN | DOHC, 4 valves/cyl |
| DISPLACEMENT | 203.9 cu in/3,342cc |
| COMPRESSION RATIO | 10.0:1 |
| POWER (SAE NET) | 365 hp @ 6,000 rpm |
| TORQUE (SAE NET) | 376 lb-ft @ 1,300 rpm |
| REDLINE | 6,500 rpm |
| WEIGHT TO POWER | 10.5 lb/hp |
| TRANSMISSION | 8-speed automatic |
| AXLE/FINAL DRIVE RATIO | 3.54:1/1.97:1 |
| SUSPENSION, FRONT; REAR | Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar |
| STEERING RATIO | 11.3:1-13.3:1 |
| URNS LOCK TO LOCK | 2.2 |
| BRAKES, F; R | 13.8-in vented disc; 13.4-in vented disc, ABS |
| WHEELS, F; R | 8.0 x 19-in; 8.5 x 19-in cast aluminum |
| TIRES, F; R | 225/40ZR19 93Y; 255/35ZR19 96Y Michelin Pilot Sport 4 |
| DIMENSIONS | |
| WHEELBASE | 111.6 in |
| TRACK, F/R | 62.8/63.1 in |
| LENGTH X WIDTH X HEIGHT | 184.5 x 72.8 x 55.1 in |
| TURNING CIRCLE | 36.1 ft |
| CURB WEIGHT | 3,833 lb |
| WEIGHT DIST, F/R | 53/47% |
| SEATING CAPACITY | 5 |
| HEADROOM, F/R | 39.7/36.9 in |
| LEGROOM, F/R | 42.6/34.8 in |
| SHOULDER ROOM, F/R | 56.3/54.6 in |
| CARGO VOLUME | 10.5 cu ft |
| TEST DATA | |
| ACCELERATION TO MPH | |
| 0-30 | 1.7 sec |
| 0-40 | 2.5 |
| 0-50 | 3.4 |
| 0-60 | 4.5 |
| 0-70 | 5.7 |
| 0-80 | 7.2 |
| 0-90 | 9.0 |
| 0-100 | 11.1 |
| PASSING, 45-65 MPH | 2.2 |
| QUARTER MILE | 13.0 sec @ 108.5 mph |
| BRAKING, 60-0 MPH | 109 ft |
| LATERAL ACCELERATION | 0.92 g (avg) |
| MT FIGURE EIGHT | 24.9 sec @ 0.77 g (avg) |
| TOP-GEAR REVS @ 60 MPH | 1,560 rpm |
| CONSUMER INFO | |
| BASE PRICE | \$44,745 |
| PRICE AS TESTED | \$46,495 |
| STABILITY/TRACTION CONTROL | Yes/Yes |
| AIRBAGS | 9: Dual front, f/r side, f/r curtain, driver knee |
| BASIC WARRANTY | 5 yrs/60,000 miles |
| POWERTRAIN WARRANTY | 10 yrs/100,000 miles |
| ROADSIDE ASSISTANCE | 5 yrs/Unlimited miles |
| FUEL CAPACITY | 15.8 gal |
| REAL MPG, CITY/HWY/COMB | 18.4/32.7/22.9 mpg |
| EPA CITY/HWY/COMB ECON | 17/26/21 mpg |
| ENERGY CONS, CITY/HWY | 198/130 kWh/100 miles |
| CO2 EMISSIONS, COMB | 0.96 lb/mile |
| RECOMMENDED FUEL | Unleaded premium |

atop J.D. Power’s quality index, our particular unit seemed out of place. Genesis offers three years of complimentary maintenance, so our two services were free. Our only out-of-pocket cost was \$989.96 for a set of tires after the right-rear rubber developed a chunking problem. For context, we spent \$469.55 on two services for our 2018 Alfa Romeo Giulia and \$561.36 on two oil changes and inspections for our 2017 Audi A4. Is the G70 a good value? Given that you cannot get into a German compact sedan with a six-cylinder engine without spending well north of \$50,000, the G70 is a tremendous bargain in the dealership. The G70 3.3T base price at time of loan was \$44,745—to which we added the Elite package (rain-sensing wipers, parking sensors, wireless charging pad) that brought the final tally to \$46,495. And this was not some stripped-down model, decontented to get an enthusiast into the six-cylinder engine upgrade. Among the standard features of the 2019 G70 3.3T, start with heated and ventilated front leather seats with 16-way adjustment and four-way lumbar support. (The passenger seat gets a 12-and-four adjustment pattern.) It gets better: aluminum interior trim, dual-zone climate control, and power tilt and telescoping steering wheel wrapped in perforated leather. SiriusXM satellite radio blasts through a brilliant 15-speaker, 660-watt Lexicon stereo. It has three USB ports and Bluetooth connectivity. And don’t forget free maintenance. Sounds like a screaming deal, right? Well, it is, on the front end. Unfortunately, the G70’s value story ends there. *MotorTrend’s* vehicle valuation subsidiary, IntelliChoice, predicts three-year retained value at a middling 62 percent for a G70 with 42,000 miles on it. What’s more, depreciation is only

one element of cost of ownership, and when factoring in items like fuel costs and insurance over a five-year ownership period, the G70 3.3T ranks Poor for the 2019 model and Mediocre for the 2020 model, according to IntelliChoice. By contrast, a 2020 3 Series ranks Excellent. “A bang-for-your-buck transaction does not take long-term costs into account,” IntelliChoice’s Debbie Eldridge said. If you are willing to step back to the base 2.0-liter turbo-four, however, IntelliChoice’s long-term value rating improves to Good. One reason why: Our G70’s playful 3.3-liter twin-turbo was thirsty. Despite the many, many freeway miles we put on it, the G70 averaged a disappointing 20.1 mpg during its year in service. We spent \$3,258 for 831 gallons of gasoline. As you may have read in the G70’s final update, the Genesis marque’s plan to use virtual dealerships (as in, everything involving the customer happens out of sight while a nearby Hyundai dealership makes the sausage) fell apart with COVID ruining the idea of concierge service. That’s right, Genesis has no stand-alone dealerships. Yet. Some people care about hanging out in plush waiting rooms; apparently Genesis thinks its buyers will, too, as it has plans for a network of Taj Majals. Dealers are going to start turning shovels on those projects by the end of this year, with the first showrooms opening in 2022. But in the interim, it means fighting for service space alongside Elantras and Sonatas going in for their 120,000-mile appointment. Is that a luxury experience? A cadre of marketing consultants will no doubt gladly bend your ear discussing the definition. Regardless, as a car, the G70 makes a strong case that Korea’s first premium automotive brand has truly arrived on the scene.

OUR G70’S PLAYFUL 3.3-LITER TWIN-TURBO WAS THIRSTY, AVERAGING A DISAPPOINTING 20.1 MPG.



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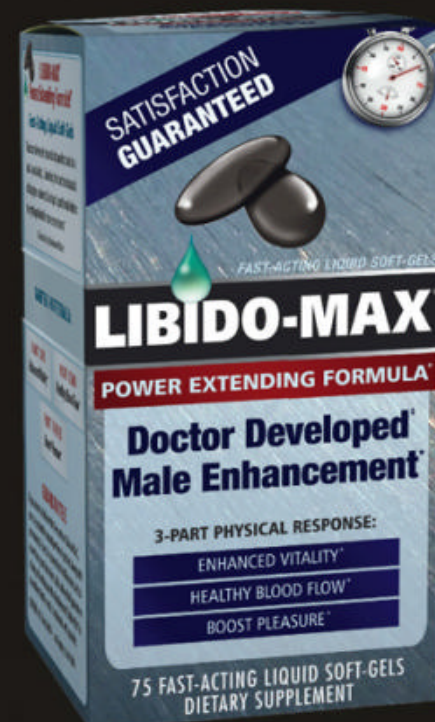
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The Big Picture



Future Shock? Not so much.

"Designing cars is nothing more than applied futurology," says Mercedes-Benz chief designer Bruno Sacco. But if the futurology of the '50s had come true, our streets would be full of atomic-powered cars with joystick controls and radar guidance systems. In truth, the basic concept of the motor car has hardly changed in 70 years—four wheels, steering wheel, petrol engine up front, room aboard for between four and six passengers. On the eve of the 21st century, the car remains remarkably true to its origins.

I wrote those words 30 years ago, for a cover story published in the August 27, 1991, edition of the Australian weekly news magazine, *The Bulletin*. The story attempted to bring together developments in automotive technology, emerging social and political trends, and environmental issues to predict what sort of cars we might drive, and how we might use them, in 2001 and beyond. I found the story the other day while digging through some old files. It was fascinating to reread, to see what I got right, what I got wrong, and to realize that the future takes longer to arrive than you think.

Snapshots from 1991: There were 400 million cars, trucks, and SUVs on the world's roads, a 10-fold increase since 1951. More than 500,000 people around the world were killed each year in motor vehicles, and 15 million injured. Motor vehicles accounted for 90 percent of the carbon monoxide and lead found in urban air and up to 15 percent of the carbon dioxide emitted into the earth's atmosphere as a whole.

Some of the auto industry's clearest thinkers were worried where those numbers were taking us. "To defend the car at all costs would be very unwise," then-Volvo chairman Pehr Gyllenhammar told me. "The car cannot be allowed to be an end in itself. We have to make it clean and plan its use more efficiently."

Volkswagen's director of research and development at the time, Ulrich Seiffert, said the car could only survive another 40 years in a form we recognized. Bob Eaton, then running GM Europe, disagreed: "The car is about freedom—the freedom to do what you want, when you want. The car will change. But it won't go away."

My take?

A typical family garage of the 21st century might contain a very small, very light, and highly efficient electric-powered commuter vehicle and a hybrid diesel- or two-stroke-powered vehicle with four-wheel drive, four-wheel steering, active suspension, and onboard satellite navigation system that is capable of cruising safely at 80 mph while using half the fuel today's car does at 50 mph.

Fast-forward to 2021, and it all sounds eerily familiar. By the end of this year, there will be at least 23 electric vehicles on sale in the United States, with many more arriving soon. And hybrids? Almost every automaker offers some version, ranging from mild to plug-in.



OK, the two-stroke prediction was a miss, though at the time GM, Ford, and Honda all looked closely at Australian inventor Ralph Sarich's three-cylinder orbital combustion process two-stroke engine, which promised light weight, low cost, and high performance. Toyota actually built a two-stroke I-6 with double overhead cams and four valves per cylinder. But AWD is common and sat-nav ubiquitous. Four-wheel steering and active suspension can be found on performance and luxury vehicles.

My early view of the electric vehicle was shaped by the only one I'd driven: a GM EV1, a car whose entire engineering raison d'être was to minimize the limitations of heavy, inefficient lead-acid batteries. The lighter, more power-dense lithium-ion battery had only just been invented, and it would be 13 years before a little-known startup called Tesla Motors would begin developing an EV that used the technology. Unlike GM's moonshot EV1, the Tesla Roadster by comparison looked like a regular car.

We're now into the third decade of the 21st century, and most new automobiles are still something Henry Ford or Ferdinand Porsche or Soichiro Honda would fundamentally recognize as such. ■

We've poured decades of ink into considering what the car of the future will look like—this 1951 cover imagined atomic power—but for the most part, they look the same.

Unlike GM's EV1, the Tesla Roadster looked like a regular car.



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